FINAL RCRA FACILITY ASSESSMENT
MACDERMID, INCORPORATED
RCRA FACILITY ASSESSMENTS

Prepared for:

U.S. Environmental Protection Agency

Contract No.: 68-W9-0003

Work Assignment No.: R01038

TES-6

TRC

TRC Environmental Corporation

TRC
Environmental Solutions through Technology

TRC Environmental Corporation
Booth Mills South, Foot of John Street
Lowell, MA 01852
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Ms. Kathy Castagna
Regional Project Officer
U.S. Environmental Protection Agency
Waste Management Division
JFK Federal Building, Room 2203
Boston, Massachusetts 02203

September 24, 1993

NAME: MacDermid Inc
I.D. NO.: CTD001164599
FILE LOC: R-5
OTHER:

Reference: Contract No. 68-W9-0003, TES-6
Work Assignment No. R01038
MacDermid, Incorporated
RCRA Facility Assessments
(Ref. 1-635-368)

Subject: Deliverable: Final RCRA Facility Assessment

Dear Ms. Castagna:

In accordance with the reporting requirements of the subject Work Assignment, enclosed is one (1) copy of the Final RCRA Facility Assessment (RFA) for the MacDermid, Incorporated facility in Waterbury, Connecticut (EPA ID No. CTD001164599). Please note that two (2) copies of this deliverable and a 3 1/2" diskette version have been submitted directly to the Work Assignment Manager (WAM), Ernest Waterman. Also note that the Final NCAPS Data Input Forms have been submitted under separate cover on this date. This submittal satisfies an additional deliverable requirement for this Work Assignment.

The Draft RFA Report was submitted to EPA and CTDEP on July 8, 1993. Review comments were received from EPA and addressed in this final report. Upon instruction from the EPA WAM, TRC did not add AOCs as requested in EPA comments 1, 2, 3 and 6. Text was edited to clarify AOC status. Please note that one (1) copy of the Final RFA Report (no NCAPS Forms) has been sent to the state contact, under separate cover. A copy of the cover letter to the state will be provided to the WAM.

Questions regarding this submission should be directed to the TRC Project Manager, Joanna Hall, at (508) 970-5757 extension 5256, or me.

Sincerely yours,

William J. Farino
Regional Manager

WJF/efg
Enclosure
cc: Ernest Waterman/EPA Work Assignment Manager
David Boyd/EPA TES-6 Contracting Officer (letter only)
Jack Lewis, Jr./TRC TES-6 Contracts Manager (letter only)
Joanna Hall/TRC Project Manager

FINAL RCRA FACILITY ASSESSMENT
MACDERMID, INCORPORATED
WATERBURY, CONNECTICUT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Waste Management Division
JFK Federal Building
Boston, Massachusetts 02203

Work Assignment No.:	R01038
EPA Region:	I
EPA Site/Facility I.D. No.:	CTD001164599
Contract No.:	68-W9-0003 (TES-6)
TRC Document No.:	L93-670
TRC Project No.:	1-635-368-3-1001-M
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Subcontractor Project Manager:	N/A
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Date Prepared:	September 24, 1993

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TRC

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1.0 INTRODUCTION

TRC Environmental Corporation (TRC) was requested by the U.S. Environmental Protection Agency (EPA) under EPA Contract No. 68-W9-0003 (TES-6), Work Assignment No. R01038, to perform a RCRA Facility Assessment (RFA) of the MacDermid, Incorporated, Huntingdon Avenue (MacDermid) facility (EPA Facility ID No. CTD001164599 in Waterbury, Connecticut. All tasks were performed in accordance with the RFA Scope of Work provided by EPA on October 14, 1992, and TRC's EPA-approved Work Plan, dated November 13, 1992. The Draft RFA Report was submitted to EPA and CTDEP on July 8, 1993. Comments on the Draft Report were received from EPA and have been addressed in the Final RFA Report.

The purpose of the RFA is to identify, gather information on, and evaluate the potential for releases to the environment from Areas of Concern (AOCs), including solid waste management units (SWMUs) and areas where releases may have occurred in the past. In addition, the RFA will provide information in support of EPA's Stabilization Collaboration Initiative (SCI).

Background information for this RFA Report was obtained through file searches conducted at the Connecticut State Department of Environmental Protection (CTDEP) and EPA Regional offices; telephone interviews with local officials, facility representatives, and individuals familiar with the property history and characteristics; and conversations with other Federal, State and local agencies. TRC conducted a Visual Site Inspection (VSI) at the MacDermid facility on May 5, 1993 to collect additional information and observe and document site conditions. As agreed upon with EPA, water-use and population data were obtained from Frost Associates, Inc., who used a computerized method and data from 1990 U.S. Census files to calculate populations on public and private water within specified distance rings. In addition, TRC used topographic map interpretation and interviews with local officials to obtain drinking water and population data for the 0- to 0.25-mile and 0.25- to 0.5-mile distance rings.

This RFA Report is organized into the following sections and appendices, in accordance with Appendix A of EPA's Scope of Work for this assignment:

1.0 Introduction
2.0 Site Description
3.0 Site Activity/History
4.0 Environmental Setting
5.0 Preliminary Stabilization Evaluation
6.0 Summary
References

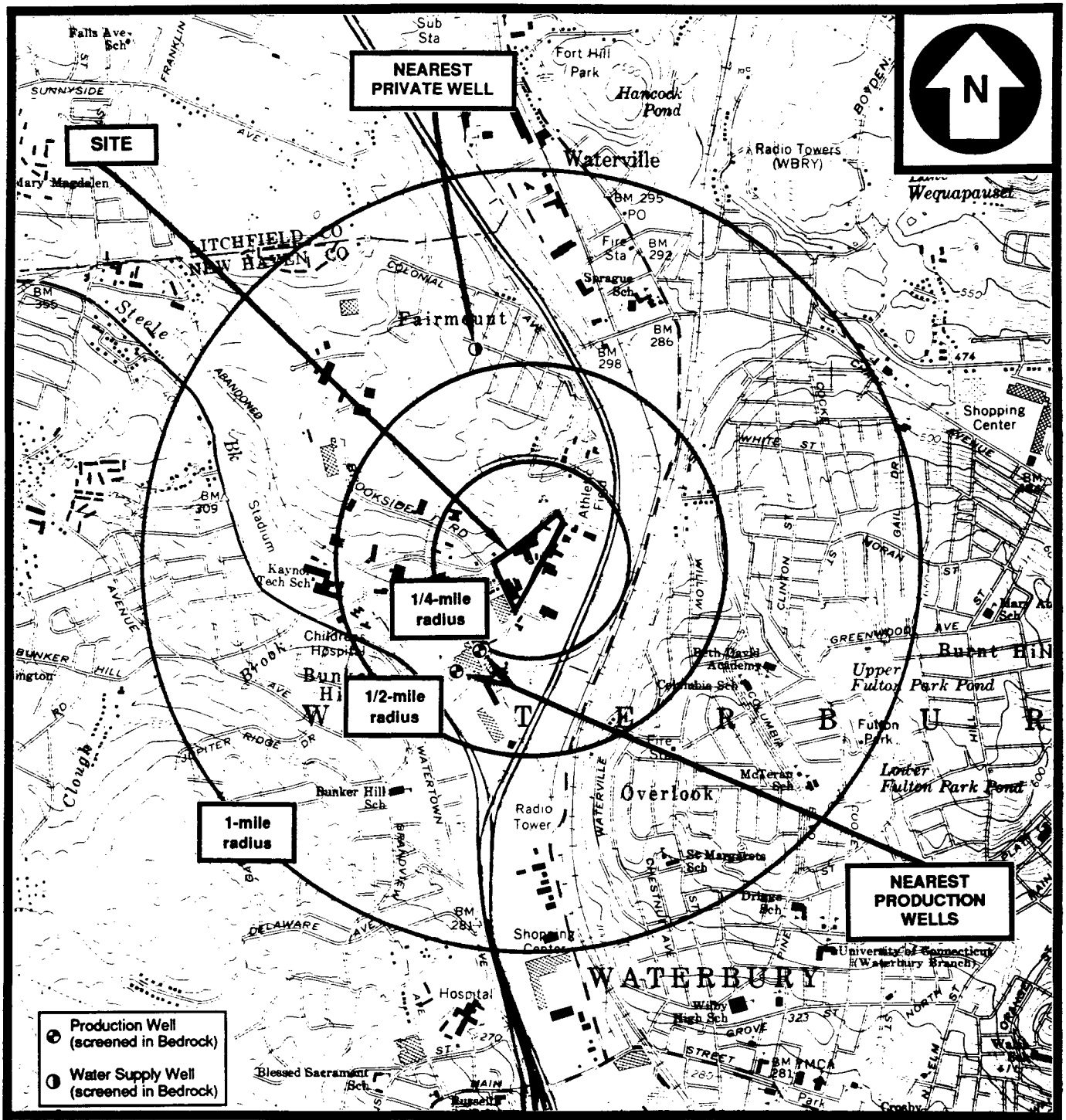
Appendix A - Areas of Concern
Appendix B - Selected Past Regulatory Information and Investigative Data
Appendix C - Scanned Copies of Photographs Taken During the Visual Site Inspection

Original photographs taken during the VSI, along with the negatives, have been retained in TRC's project files.

2.0 SITE DESCRIPTION

The MacDermid, Incorporated, Huntingdon Avenue (MacDermid) facility is located at 526 Huntingdon Avenue in Waterbury, New Haven County, Connecticut, at 41° 34′ 39.6″ north latitude and 73° 03′ 22.5″ west longitude (Gabis (TRC), 1993a). The main part of the property encompasses a city block between Huntingdon Avenue, East Aurora Street, and Gear Street and is 11 acres in size (Figure 1) (City of Waterbury, 1993). MacDermid is bordered by residences to the west, by four small businesses to the south, by an auto-body shop to the east and by 42 acres of property also owned by MacDermid to the north (TRC, 1993).

MacDermid has been in business at this location since 1930 (CTDEP, 1984a). Its main operation is the blending of custom chemicals for the metal plating, plating on plastics, and printed circuit board industries (HRP, 1990). MacDermid has two facilities in Waterbury: a smaller one, on Freight Street, the management office and a research laboratory, and a larger



BASE MAP IS A PORTION OF THE FOLLOWING USGS 7.5' SERIES QUADRANGLE: WATERBURY, CT, 1968, PHOTOREVISED 1984

LOCATION MAP

MACDERMID, INC.- HUNTINGDON AVE. FACILITY
WATERBURY, CONNECTICUT

TRC

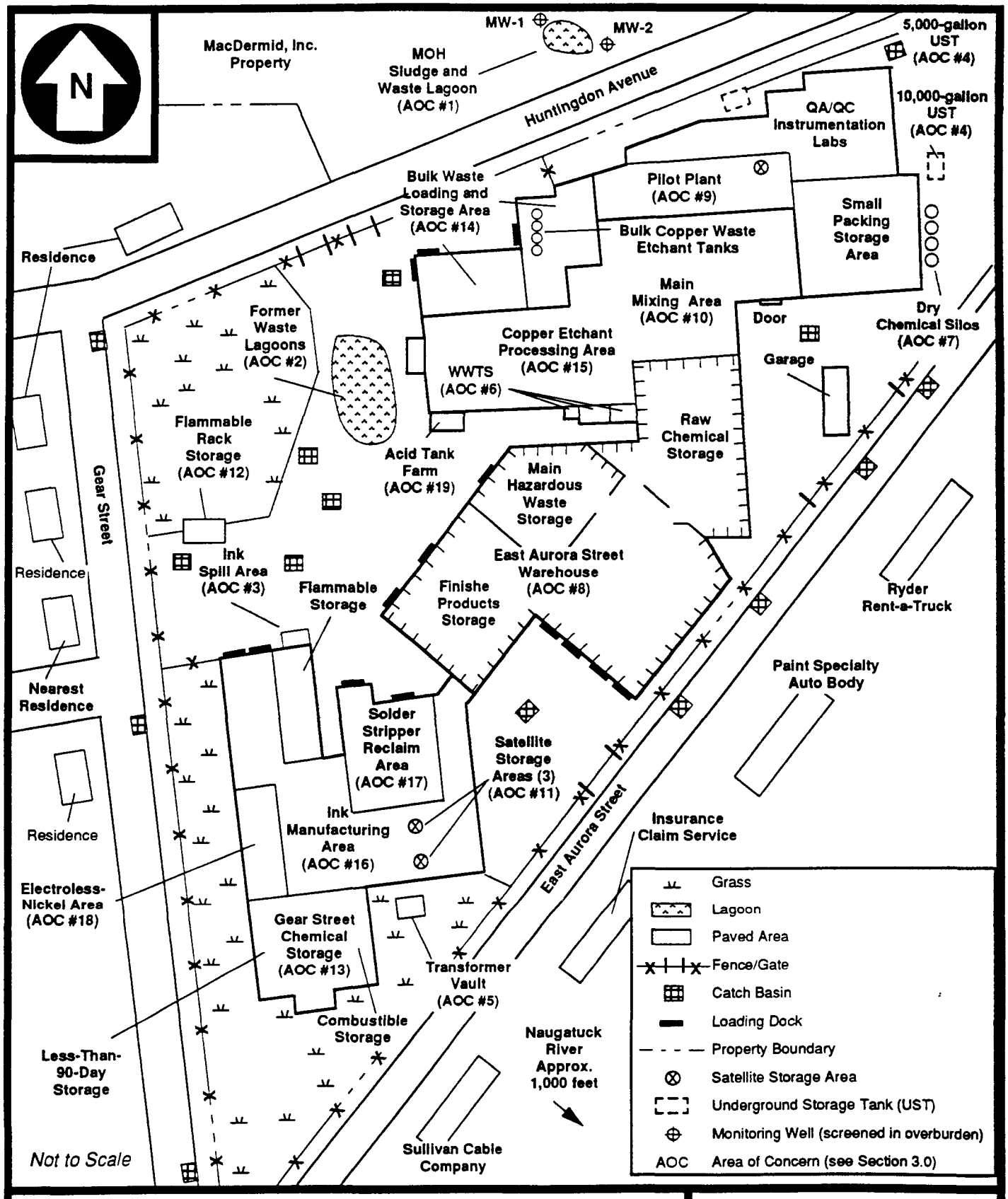
Figure 1.

one, on Huntingdon Avenue, largely a spent chemical recycling/reclamation facility for other MacDermid facilities and MacDermid customers (HRP, 1990). The Huntingdon Avenue facility is the subject of this report.

The property investigated consists of three manufacturing and warehouse buildings: a 98,380-square-foot manufacturing building, a 36,000-square-foot ink manufacturing building and a 45,000-square-foot warehouse (Figure 2). The warehouse faces East Aurora Street and will be referred to as the "warehouse." The 98,380-square-foot manufacturing building facing Huntingdon Avenue will be referred to as the "Huntingdon Avenue building." The 36,000-square-foot ink building faces along Gear Street and will be referred to as the "Gear Street building."

The warehouse contains four main areas: the shipping and receiving and loading dock area, two spot-check QA/QC areas, the finished products storage area, and the main hazardous waste storage area (TRC, 1993; HRP, 1990). The entire building has an epoxy-coated concrete floor (TRC, 1993; HRP, 1990).

The main hazardous waste storage area contains a five-tier drum storage rack on which up to 77,000 gallons of waste can be stored (HRP, 1990). The room is 92 feet long by 42 feet wide and has a separate loading dock on the north side of the warehouse from which waste may enter and leave the building (HRP, 1990). Spills from the loading dock may flow toward the driveway; a catch basin in the driveway is covered during testing so that no waste leaves the site (HRP, 1990). There is no history of spills in this area. The main hazardous waste storage area is surrounded by a 3.5-inch epoxy-coated concrete containment berm and the floor slopes toward a 200-gallon collection sump. Materials spilled into the sump are tested to determine if they can be discharged to the wastewater treatment system (WWTS). If they cannot, the wastes are pumped into drums for off-site disposal. If they can, a valve is opened and the wastes enter floor pipes leading to the WWTS (HRP, 1990).



SITE SKETCH

MACDERMID, INC.
WATERBURY, CONNECTICUT

TRC

Figure 2.

MS701.N

The finished products storage area is used to store saleable materials on a five-tier drum rack. Spills in this area are contained by the walls of the room (HRP, 1990).

The shipping and receiving area along East Aurora Street has several loading docks and another spot-check QA/QC area (HRP, 1990). Spills in this area are contained by 3.5-inch epoxy-coated concrete berms along the garage doors and are directed toward the center of the area by sloping floors (HRP, 1990). There is no sump in this area, therefore, spills would be cleaned up (HRP, 1990). The warehouse is connected to the Huntingdon Avenue building by a raw chemical storage area. These materials are dry chemicals (e.g., sodium hydroxide) and are contained by the walls of the building (HRP, 1990; TRC, 1993). The dry chemicals were formerly stored in dry chemical silos located on the east side of the Huntingdon Avenue building (TRC, 1993).

The Huntingdon Avenue building contains the copper etchant reclamation area, the bulk loading/unloading and storage area, the QA/QC and instrumentation laboratories, the Pilot Plant, the dry chemical mixing area, and the small packaging storage area (HRP, 1990; TRC, 1993). The building has an epoxy-coated concrete floor (TRC, 1993).

The small packaging area is used to store sample sizes and small quantities (55 gallons) of chemicals for customers (TRC, 1993). These goods are stored in drums and packs on a four-tier drum rack and spills are contained by the concrete walls (TRC, 1993).

The Pilot Plant produces small batches (100 to 200 gallons) of chemicals for testing and sample use (TRC, 1993; HRP, 1990). Spills from this area are collected in floor sumps and after testing, flow into the WWTS (HRP, 1990; TRC, 1993). North of the Pilot Plant are the QA/QC and instrumentation laboratories. The small quantities of waste produced here are stored in one or two drums in a "satellite storage area" (HRP, 1990). The satellite storage

area is located in the Pilot Plant and consists of one to two 55-gallon drums surrounded by a 3.5-inch, epoxy-coated angle iron berm (HRP, 1990). The drums are periodically removed (TRC, 1993).

The dry mixing area is used to blend and repackage drums of dry chemicals (ie: gold cyanide salts, etc.) for shipment (HRP, 1990). Copper plating solution liquid mixing also used to take place here (CTDEP, 1992). Drum wash from this area and any other spills are led into floor drains which discharge to the WWTS (CTDEP, 1987a; CTDEP, 1989a,b; CTDEP, 1992). Dust from this area is fed to a dust collector and washwater from the dust collector is led to the WWTS (CTDEP, 1992).

The west end of the Huntingdon Avenue building contains the bulk storage loading/unloading area, the copper etchant reclamation area and the WWTS. The bulk storage loading/ unloading area receives used chemicals from customers and other MacDermid facilities. Materials received at this dock (usually spent copper etchant) are pumped into four bulk waste storage tanks adjacent to the dock (HRP, 1990). There are three 8,000-gallon and one 5,000-gallon tanks surrounded by a two-foot-high by seven-inch-wide epoxy-coated concrete berm (HRP, 1990). Spills on the loading dock are contained by the walls and by a 3.5-inch concrete berm at the doors (HRP, 1990). The sloping floor leads to floor drains and the WWTS. Catch basins outside in the yard are covered during loading and unloading operations (HRP, 1990). Drums are washed on the loading dock after being emptied and these fluids go to a sump which discharges to the WWTS (CTDEP, 1992).

The copper etchant reclamation area is in the west-central section of the Huntingdon Avenue building (HRP, 1990). Spent copper etchant solution is fed through a series of 13 processing tanks before recycled product is emptied into three 6,300-gallon finished product tanks (HRP, 1990). Spills from this area travel through floor trenches directly to the WWTS (HRP, 1990). The total volume of the processing tanks is 37,800 gallons (not including the bulk storage

tanks or the finished product tanks) (HRP, 1990). Currently, approximately 3,000,000 gallons per year of spent copper etchant are reclaimed in this area (MacDermid, 1993a).

The wastewater treatment system (WWTS) consists of eight 15,000-gallon concrete batch tanks, two 3,000-gallon metal hydroxide (MOH) slurry tanks, 17,000- and 8,000-gallon holding tanks, a 12,000-gallon equalization/collection tank, a 15-cubic-foot filter press for MOH slurry and a 26-cubic-yard MOH sludge roll-off container (CTDEP, 1987a). The slurry tanks are open steel tanks within a 3.5-inch epoxy-coated concrete berm (CTDEP, 1992; TRC, 1993). The filter press is also surrounded by a berm (TRC, 1993). Most of the WWTS is contained within the building walls, with the exception of the 15,000-gallon tanks; these tanks are adjacent to the building, with a plastic roof above them (TRC, 1993). The system processes approximately 60,000 gallons per day of wastewater which is fed to the Waterbury municipal sewer system via a nearby sewer outfall (CTDEP, 1990a). A wet scrubber is used in this area to vent vapors, chiefly ammonia, out of the plant (CTDEP, 1989a,b). The open tanks also occasionally emit ammonia vapors to the outside (*Waterbury Republican*, 1990).

After dewatering in the filter press, the MOH sludge is collected in the roll-off, located in a concrete garage adjacent to the building (TRC, 1993). The garage has a two-foot concrete berm at the garage entrance (TRC, 1993). The rolloff is periodically removed and shipped to Stablex, Quebec, Canada (CTDEP, 1992). MacDermid generates approximately 200 cubic yards of MOH sludge per year (MacDermid, 1993b).

Outside, immediately adjacent to the west wall of the Huntingdon Avenue building, MacDermid maintains a tank farm for the storage of hydrochloric acid, nitric acid, sulfuric acid, and hydrogen peroxide (CTDEP, 1987a; HRP, 1990). There are five 3,000-gallon tanks (Gabis (TRC), 1993c). The area is surrounded by a fence and rests on a asphalt, surrounded by a 2-3-foot concrete berm and fence (TRC, 1993).

There are four dry chemical storage silos located on the east side of the Huntingdon Avenue building. These silos are 10,000-gallon steel tanks on a concrete pad (TRC, 1993). The silos

are currently empty. Materials formerly held in the silos are now being stored in the raw chemical storage area (TRC, 1993).

The warehouse is connected to the Gear Street building on its south side. The Gear Street building contains the flammable storage area, the combustible storage area, and the less-than-90-day storage area (HRP, 1990; CTDEP, 1992; TRC, 1993). The entire building has an epoxy-coated concrete floor (TRC, 1993).

The flammable storage area is located in the northern end of the building, along the eastern wall (HRP, 1990; TRC, 1993). This area is designed to store up to 16 drums of waste in an eight-foot by ten-foot area and is surrounded by an epoxy-coated four-inch angle-iron berm (HRP, 1990). Outside the berm is a floor trench which leads to the WWTS (HRP, 1990).

The combustible storage area is located in the south end of the Gear Street building. It is designed to store 54 55-gallon drums and four 330-gallon storage totes (HRP, 1990). The area is surrounded by a four-inch, epoxy-coated angle-iron berm (HRP, 1990).

The less-than-90-day storage area is located in the south end of the Gear Street building, next to the electroless-nickel area. It is used as a drum storage area and is contained by four-inch, epoxy-coated angle-iron berms (HRP, 1990; CTDEP, 1992; TRC, 1993). This storage area was added in 1992, in what used to be the N-methyl pyrolle area (CTDEP, 1992).

There are also three production areas located in the Gear Street building. The electroless-nickel plating area is located along the western wall of the Gear Street building. The area blends approximately 3,000 gallons per week of electroless-nickel plating solution for outside sales (CTDEP, 1992). The area uses eight solution blending tanks, the largest of which is 1,200 gallons in volume (CTDEP, 1992). Waste from this area is collected in a floor trench. Water containing nickel is filtered before being added to the WWTS and the filtered nickel is drummed and shipped off site (CTDEP, 1992). Containment for this area is provided by the building walls and the floor trench (CTDEP, 1992). The area has a wet scrubber to remove ammonia vapors generated during processing (CTDEP, 1992).

The solder stripping area is located in the northwest section of the Gear Street building. Solder stripper reclamation is the second major recycling operation at the facility. Spent lead solder stripper is unloaded on the north side of the building and pumped into a 3,000-gallon settling tank (HRP, 1990; TRC, 1993). Lead fluoride settles out of the tank and is drummed and shipped to a permitted disposal facility (TRC, 1993). From the settling tank, the liquid is pumped to two 1,000-gallon electrolytic cells where copper powder is electroplated out of solution, packed and sold as scrap (HRP, 1990). The liquid is then pumped to two 1,500-gallon polyethylene tanks for further copper removal and subsequent reconstitution of finished product (HRP, 1990). A filter press removes any remaining metal solids and the sludge is drummed and sent off site (HRP, 1990). Containment for this area is provided by the building walls and by the sloping floor which leads to floor drains connected to the WWTS (HRP, 1990).

The ink manufacturing area is located in the center of the Gear Street building. This area is used to blend inks for the printed circuit board industry (HRP, 1990; CTDEP, 1989a,b). MacDermid uses rollers to crush pigment powders and mixes the powders with polymers, resins, and solvents in a series of 140-gallon vats under vacuum (CTDEP, 1989a,b; CTDEP, 1990c; CTDEP, 1992). The finished product is packed in one- and five-gallon cans for shipping to customers (CTDEP, 1989a,b). Spills in this area formerly discharged to a sump on the north side of the building, leading to the municipal sewer system, but the sump is now filled with concrete (Gabis (TRC) 1993c; CTDEP, 1990c). Waste is now mopped up with rags and stored in two satellite storage areas before being shipped off site (CTDEP, 1990c). Waste solvents generated here are collected in drums in the satellite storage areas and stored in the combustible area prior to disposal (CTDEP, 1990c; CTDEP, 1992).

Outside the buildings there are six areas where hazardous materials are presently or have been stored. In 1987, an ink spill under a concrete pad near the sump was discovered on the north side of the Gear Street building (IPC, 1987). Approximately 550 cubic feet of soil was eventually removed (IPC, 1987; IPC, 1988). There is an electrical transformer located in the corner of the east side of the Gear Street building (TRC, 1993). The transformer is approximately four feet by four feet by four feet and rests on a concrete pad (TRC, 1993).

Two underground oil storage tanks (USTs) are located on the northeast side of the Huntingdon Avenue building (TRC, 1993). A 5,000-gallon fuel oil tank is located in front of the office entrance, on the north side of the building and a 10,000-gallon, empty tank is located on the east side, next to the dry chemical silos (TRC, 1993). Each tank is tight-tested every year (TRC,1993). A flammable raw product rack storage area is located on an unbermed, concrete pad near the grass between the Gear Street and Huntingdon Avenue buildings (TRC, 1993). Raw, flammable materials are stored in secured drums on the four-tier drum rack, which is approximately 40 feet high, 40 feet long and 25 feet deep (TRC, 1993).

Adjacent to the west side of the Huntingdon Avenue building is a paved area that was formerly the location of two waste lagoons and a waste MOH sludge storage area (CTDEP, 1987a). One lagoon was for organic/solvent waste and the other lagoon for MOH sludge (CTDEP, 1987a; IPC, 1986). Lagoons were used to settle precipitates from the wastewater from at least 1972 and probably prior to that (CTDEP, 1987a; Gabis (TRC), 1993c). Untreated wastewater was decanted and discharged to the municipal sewer system (Gabis (TRC), 1993c). The material from the MOH sludge storage area was excavated and transferred to a landfill. Waste from the two lagoons (approximately 1,000 cubic yards) was deposited in a lagoon across Huntingdon Avenue (IPC, 1986; CTDEP, 1987a).

The MOH sludge and waste organics lagoon across Huntingdon Avenue is located approximately 500 feet north of the road, on additional MacDermid property (TRC, 1993). The lagoon received MOH sludge and unidentified organic wastes in 1982-1983 and was filled and paved over in 1986 (CTDEP, 1987a; IPC, 1986). The lagoon area, which is situated on top of a bedrock ledge, is 95 feet long and 50 feet wide and has monitoring wells on the north (upgradient) and south (downgradient) sides (TRC, 1993; IPC, 1986). A pile of excavated soil from the pit lies uncovered on the north side of the lagoon. Some debris has been dumped in the area and there are cracks in the asphalt (TRC, 1993). The monitoring wells were located and capped, but had no concrete pads surrounding the well casing (TRC, 1993).

The MacDermid facility is surrounded by a six-foot high steel fence, topped with barbed wire (TRC, 1993; HRP, 1990). There are two gates on Huntingdon Avenue that are manned by a security guard, who admits the waste haulers (HRP, 1990). There are two open gates on the East Aurora Street side. These gates are kept under surveillance during the day and are locked at night (HRP, 1990). There are two entry doors for the buildings, one on Huntingdon Avenue, at the main office entrance and one at the warehouse; these entrances are staffed during the day and locked at night (HRP, 1990). Employees have electronic cards to activate interior doors and all visitors must be accompanied by an employee (TRC, 1993; HRP, 1990). Electronic security systems are activated at night and alarms are in place at the WWTS, the sprinkler system, and certain sensitive equipment areas, such as the boiler room (HRP, 1990).

The WWTS discharges to the municipal sewer system and from there to the Naugatuck River. Six catch basins in the MacDermid parking lot lead to Steele Brook, 900 feet west of the site. There are an additional five catch basins on East Aurora Street and three on Gear Street (TRC, 1993).

The site is in a mixed commercial/residential/industrial area (TRC, 1993). The nearest residence is 150 feet west of the facility, across Gear Street (TRC, 1993). Ryder Rent-a-Truck, Paint Specialty-Auto Body, Insurance Claim Service and Sullivan Cable Company are all south of the facility, across East Aurora Street, and Tuttle Auto Body is east of the facility (TRC, 1993).

The property is on primarily level ground between Steele Brook and the Naugatuck River but slopes gradually southeast to the river approximately 1,000 feet southeast of the facility (USGS, 1984a; TRC, 1993).

Nineteen (19) Areas of Concern (AOCs) were identified through file review at the EPA and CTDEP and during TRC's VSI on May 5, 1993. Table 1 summarizes the AOCs, including their potential to release to the environment. The AOCs history will be described in further

TABLE 1. AREAS OF CONCERN SUMMARY FOR THE MACDERMID INCORPORATED, HUNTINGDON AVENUE FACILITY, WATERBURY, CONNECTICUT

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#1 MOH Sludge and Waste Lagoon	North of Huntingdon Avenue; an unlined area, 50′ × 95′, filled with MOH sludge and unspecified wastes, paved with asphalt.	1978 - present	Release to soil and ground water	Ground water: 46.5 ppm fluoride	Yes	IPC, 1986 CTDEP, 1987a
#2 Former Waste Lagoons (3)	Formerly located in parking lot, west of Huntingdon Avenue building, contained inorganic wastes, MOH, organic waste, and one storage area for sludge.	1930 - 1978(2) and 1978 - 1980(1)	Release to soil, surface water, ground water	No analytical data are available.	Yes	IPC, 1986 CTDEP, 1987a
#3 Ink Spill Area	Contaminated soil, 550 cubic feet, under concrete pad adjacent to Gear Street building.	Unknown	Release to soil, ground water	Soils: 70 ppb 1,1,1-trichloroethane 2,910 ppb ethylbenzene 62,970 ppb toluene 11,450 ppb xylene	Yes	IPC, 1987 IPC, 1988a,b

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#4 Underground Storage Tanks (USTs) (2)	One 5,000-gallon heating oil UST, located on the north side of the Huntingdon Avenue building. One 10,000-gallon diesel UST, empty, next to dry chemical silos, on east side of Huntingdon Avenue building.	Unknown-present	Low potential for release	No analytical data are available.	Yes	TRC, 1993
#5 Transformer Vault	One steel vault, 4′ by 4′ by 4′, on a concrete pad, next to Gear Street building, facing East Aurora Street.	Unknown-present	Low potential for release	No analytical data are available.	No	TRC, 1993

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#6 WWTS	Consists of 13 waste treatment tanks, a 15-cubic-yard filter press and 26-cubic-yard MOH sludge roll-off. Total volume of system: 60,000 gallons. All in concrete-floored, bermed areas. WWTS discharges to Naugatuck River via Waterbury municipal sewer drain on site.	WWTS without roll-off: 1972-1980. WWTS with 26-cubic yard^3 roll-off: 1980-present.	Release to surface water	Surface water: 5.4 ppm chromium 9.4 ppm cyanide (amenable)	Yes	CTDEP, 1984a CTDEP, 1987a CTDEP, 1989a,b CTDEP, 1992 HRP, 1990
#7 Dry Chemical Silos (4)	Four 10,000-gallon steel silos, currently empty; contained sodium carbonate; sodium metasilicate, sodium hydroxide, sodium hydrogen sulfate.	Unknown - present	Low potential for release	No analytical data are available.	No	CTDEP, 1987a HRP, 1989

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#8 East Aurora Street Warehouse	Concrete warehouse containing Main Hazardous Waste Storage Area, the spot-check QA/QC areas, the East Aurora loading area, and the finished products storage area. All materials are in drums, stored on epoxy-coated concrete, in bermed area.	1984-present	Low potential for release	No analytical data are available.	No	HRP, 1990
#9 Pilot Plant (Including QA/QC Labs and Small Packaging Area)	Northeast end of Huntingdon Avenue building. Contains small packaging area; QA/QC lab, with 100-200-gallon test samples; the Pilot Plant. All materials on epoxy-coated concrete floor. QA/QC labs contained within rooms; Pilot Plant and small packaging area have floor drains leading to the WWTS.	1930-present Note: Pilot Plant moved from Gear Street building in 1992	Low potential for release	No analytical data are available.	No	HRP, 1990 TRC, 1993

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#10 Main Mixing Area	Main dry chemical production area in the center of Huntingdon Avenue building. Contains the dry mixing area, where drums of chemicals (e.g., gold epoxide salts) are repackaged for shipment. Formerly liquid mixing of copper plating solution from raw chemicals. Epoxy-coated concrete floor, floor drains leading to WWTS.	1930-present	Low potential for release	No analytical data are available.	No	CTDEP, 1989a,b CTDEP, 1990c CTDEP, 1992
#11 Satellite Storage Areas (3)	Three drum storage areas, one in Pilot Plant/QA/QC lab, two in ink manufacturing/Gear St. building. Each stores one to two 55-gallon drums on epoxy coated concrete floor with a 3.5-inch epoxy-coated angle-iron berm.	Unknown-present	Low potential for release	No analytical data are available.	No	HRP, 1989

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#12 Flammable Rack Storage	Four-tier drum rack storage, outside on a concrete pad in the grassy area with no berm.	Unknown-present	High potential for release	No analytical data are available.	Yes	TRC, 1993 HRP, 1990
#13 Gear Street Chemical Storage Area	Three areas: - less-than-90-day storage area - combustible area - flammable storage area All drums stored on epoxy-coated concrete floor, with angle-iron berm and concrete berm; floor drains to WWTS.	Unknown-present	Low potential for release	No analytical data are available.	No	CTDEP, 1992 HRP, 1990 TRC, 1993

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#14 Bulk Waste Loading and Storage Area	- four bulk storage tanks (three 8,000-, one 5,000-gallon) with copper etchant recycling wastes; - a spent copper etchant loading/unloading dock; - a drum washing area on the loading dock. Tanks have two-foot-seven-inch concrete berm on an epoxy-coated concrete floor, while the loading dock slopes to floor drains leading to WWTS.	Unknown-present	Release to surface water	Surface water: 320 ppm chromium 5.6 ppm lead	Yes	CTDEP,1990a,b HRP, 1990

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#15 Copper Etchant Processing Area	In Huntingdon Avenue building: A 13-tank recycling system leading to three-6,300-gallon product storage tanks. Fiber-reinforced plastic tanks are stored on epoxy-coated concrete floor. Floor drains lead to the WWTS.	1930-present	Low potential for release	No analytical data are available.	No	CTDEP, 1987a CTDEP, 1984a CTDEP, 1989a,b CTDEP, 1990c CTDEP, 1991a CTDEP, 1992 HRP, 1990
#16 Ink Manufacturing Area	In Gear Street building: Three roller mills for pressing powders are mixed with solvents in 140-gallon fiber-reinforced plastic vats. Waste solvents, rags, ink sludges collected in 55-gallon drums stored in satellite area and combustible storage area.	1930-present	Low potential for release	No analytical data are available.	No	CTDEP, 1984a CTDEP, 1987a CTDEP, 1989a,b CTDEP, 1990c CTDEP, 1991a CTDEP, 1992 HRP, 1990

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#17 Solder Stripper Reclaim Area	Located in the north end of the Gear Street building, it has three tanks totalling 5,000 gallons that process 1,300 gallons per batch of lead solder stripper. Processes occur on epoxy-coated concrete floor, sloping to floor drains leading to WWTS.	1930-present	Low potential for release	No analytical data are available.	No	CTDEP, 1989a,b CTDEP, 1990c CTDEP, 1991a CTDEP, 1992 HRP, 1990
#18 Electroless-Nickel Area	Gear Street building: Eight 1,200-gallon tanks processing 3,000 gallons/week. Wastes to filtering area and to WWTS. The area has a wet scrubber for ammonia, an epoxy-coated concrete floor, and a floor trench leading to the WWTS.	1990-present	Low potential for release	No analytical data are available.	No	CTDEP, 1992 TRC, 1993

TABLE 1. (CONTINUED)

Area of Concern (AOC)	AOC Description	Start-Up Date/Closure Date	Release Status	Regulatory Criteria Exceedance(s)*	Off-Site Migration Potential	References
#19 Acid Tank Farm	Outside, on the southwest corner of the Huntingdon Ave. building. Five, 3,000-gallon tanks on asphalt, surrounded by a 2-3 ft. concrete berm and a fence.	Unknown	Low potential for release	No analytical data are available.	Yes	TRC, 1993 Gabis (TRC), 1993c

*An exceedance is defined as a contaminant level: 1) three times above background, where data are available (soils); 2) above Maximum Contaminant Levels (MCLs) (ground water) (EPA, 1992); or 3) above Ambient Water Quality Criteria (surface water) (EPA, 1991).

detail in Section 3.0, Site Activity/Site History. Appendix A provides detailed descriptions of each AOC, including size, containment factors, and current status. The AOC locations are noted on Figure 2.

3.0 SITE ACTIVITY/HISTORY

MacDermid has been in operation at the Huntingdon Avenue location since 1930. From 1916 to 1928, the property was the location of the Waterbury Steel Ball Company (City of Waterbury, 1993). Before 1916, the property was owned by the Metal Specialty Company; it is not known what this company produced. The Waterbury Steel Ball Company leased the property to MacDermid until 1950, when MacDermid purchased the property (City of Waterbury, 1993).

The MacDermid facility specializes in the recycling of used copper etchant and solder stripper and in the blending of inks, dry chemicals, and plating solutions (HRP, 1990). A wide variety of chemicals are used and produced at the MacDermid facility. Table 2 lists the materials recycled most recently at MacDermid and the most common waste materials generated by production activities. Table 2 also presents the area of the plant most commonly associated with each material or waste product.

Until 1972 MacDermid discharged all its waste untreated to the on-site catch basins. In 1972, MacDermid installed a WWTS that used two lagoons, one inorganic and one organic, to settle waste sludge, while the liquid was discharged, untreated, to the catch basins (CTDEP, 1984a; CTDEP, 1987a). In 1978, a WWTS was installed that neutralized the wastewater. The two lagoons were excavated and the sludge placed in a lagoon across Huntingdon Avenue (CTDEP, 1984a; CTDEP, 1987a). From 1978 to 1980 the MOH sludge from the new WWTS was stockpiled in a new lagoon near the site of the old lagoons. In 1982-1983, this MOH sludge pile was excavated and approximately 168 cubic feet were sent to the Archer Landfill in Shelton, Connecticut (CTDEP, 1987a).

TABLE 2. WASTE AND HAZARDOUS MATERIALS QUANTITIES GENERATED AT MACDERMID, INCORPORATED HUNTINGDON AVENUE FACILITY 1987-1993			
Substance	**Quantity**	**Waste or Product**	**Associated Source Area**
Copper Etchant	3,400,000 gallons/year	Recycled product	Copper Etchant Area
Solder Stripper*	50,000-150,000 gallons/year	Recycled product	Solder Stripper Area
Solder Conditioner*	46,500 gallons/year	Recycled product	Solder Stripper Area
N-methyl pyrolle[1]	5,188 gallons/year	Recycled product	<90-Day Storage Area
Electroless-copper	41,529 gallons/year	Recycled product	Copper Etchant Area
Lead Fluoride*	3,000-15,000 pounds/year	Waste	Solder Stripper Area
Ink Waste	1,760 gallons/year	Waste	Ink Manufacturing Area
MOH Sludge/Soil	168 cubic yards	Waste	Former Waste Lagoons
MOH Sludge	Up to 200 cubic yards/year	Waste	WWTS
Ink Sludge/Soil	550 cubic feet	Waste	Ink Spill Area
Organic Sludge	18 drums/year	Waste	Pilot Plant
Solvents[2]	1,375 drums/year	Waste	Ink Area, Electroless-Nickel Area
Copper Sulfate	44,500 gallons; 1,070 pounds/year	Waste	Copper Etchant Area
Electroless-Nickel Waste Solution[3]	1,045 gallons/year	Waste	Electroless-Nickel Area
Vacuum Pump Oil	One drum	Waste	Ink Manufacturing Area
Acetone	One drum	Waste	Pilot Plank, Ink Manufacturing Area
Chrome	114,574 gallons/year	Waste	WWTS
Filters	14 drums	Waste	WWTS
Drums (crushed)	76 (5,944 pounds)	Waste	Loading/Unloading Areas
Acid-Zinc Solution	2,000 gallons/year	Waste	Electroless-Nickel Area
Waste Oil	300 gallons/year	Waste	Whole Facility
Methyl Ethyl Ketone	400 gallons/year	Waste	Whole Facility
Alcohol	One drum/year	Waste	Whole Facility
Formaldehyde	1,396 pounds	Waste	Whole Facility

TABLE 2. (CONTINUED)			
Substance	**Quantity**	**Waste or Product**	**Associated Source Area**
Arsenic	400 pounds	Waste	Whole Facility
Tin Chloride	280 pounds	Waste	Copper Etchant Area, Electroless-Nickel Area
Sodium Permanganate	80 pounds	Waste	Electroless-Nickel Area
Pyridine and Benzene	200 pounds	Waste	Ink Area
Methanol	60 gallons	Waste	Whole Facility
1,1,1-Trichloroethane	680 gallons	Waste	Whole Facility
Isopropropyl Alcohol	One drum	Waste	Whole Facility
Copper Chloride (liquid)	605 gallons	Waste	Copper Etchant Area
Acetate	15 gallons	Waste	Ink Manufacturing Area
Lead and Cadmium	1,355 gallons	Waste	Solder Stripping Area
Ethylene Glycol	1,265 gallons	Waste	Whole Facility
Chromic Acid	1,574 pounds	Waste	Copper Etchant, Electroless-Nickel Area
Copper Chloride (solid)	2,390 pounds	Waste	Copper Etchant Area
Glycol Ether	880 gallons	Waste	Whole Facility
Titanium Sulfate	300 pounds	Waste	Whole Facility
Barium Hydroxide	45 pounds	Waste	Whole Facility
Phosphoric Acid	800 pounds	Waste	Electroless-Nickel Area, Pilot Plant, QA/QC Laboratories, WWTS
Sodium Hydroxide	2,194 pounds	Waste	WWTS
Acetone	One drum (55 gallons)	Waste	Whole Facility
Hydrochloric Acid	149,280 pounds	Waste	Whole Facility
Nickel Sulfate	800 gallons	Waste	Electroless-Nickel Area
Cadmium/Sodium Fluoride	874 pounds	Waste	Solder Stripping Area
Styrene	245 pounds	Waste	Ink Manufacturing Area

TABLE 2. (CONTINUED)			
Substance	***Quantity***	**Waste or *Product***	***Associated Source Area***
Ammonium Nitrate	65 pounds	Waste	WWTS
Potassium Hydroxide	200 pounds/year	Waste	Whole Facility
Anilines	685 pounds/year	Waste	Ink Manufacturing Area
Sodium Cyanide; Cadmium Cyanide	100 pounds/year	Waste	Electroless-Nickel Area, Dry Chemical Mix Area
Sodium Sulfate	425 pounds/year	Waste	WWTS
Ethanol	1,135 pounds/year	Waste	Whole Facility
Sulfuric Acid	52,918 pounds/year	Waste	Whole Facility
Toluene/Xylene	1,125 pounds/year	Waste	Whole Facility
Isocyanate	400 pounds/year	Waste	Electroless-Nickel Area, Dry Chemical Mixing Area
Resin/Acrylimide	165 gallons/year	Waste	Ink Manufacturing Area
Mercaptan	74 pounds/year	Waste	Ink Manufacturing Area

References: MacDermid, 1993a,b; CTDEP, 1987a; EPA, 1991a; IPC, 1986; IPC, 1988a,b
* = Waste quantities recently reduced
1 = No longer produced
2 = Undifferentiated solvents
3 = Includes approximately 600 gallons produced at Freight Street facility.

MacDermid uses several hazardous waste transporters and disposal facilities. The MOH sludge is sent by Sealand, Inc. to Stablex, Quebec, Canada for disposal (CTDEP, 1992). Lead fluoride is sent out and disposed of by Laidlaw, Inc. (TRC, 1993). Electroless-copper waste was once shipped to DuPont, New Jersey, but is now sent to another MacDermid facility in Ferndale, Michigan for reclamation (MacDermid, 1992). Chrome wastes are shipped to DuPont, New Jersey for disposal (MacDermid, 1993a,b). Other transporters and disposal facilities include: WRC, Pennsylvania for MOH sludge; EWR, Waterbury, for solvents and corrosives; CP Chemical for copper sulfate; and Solvent Recovery Service (SRS) for used solvents (CTDEP, 1987a; CTDEP, 1989a; CTDEP, 1990c; CTDEP, 1992).

MacDermid submitted a RCRA Part A Application, the Hazardous Waste Notification Form, on November 13, 1980, but modified it in 1985, 1990, and 1991 (EPA, 1980; EPA, 1985;

EPA, 1990; EPA, 1991a). The most recent waste storage capacities identified on the form include 29,000 gallons bulk waste storage, 26 cubic yards in a roll-off, and 82,170 gallons of total hazardous waste storage (EPA, 1991a). MacDermid first submitted a RCRA Part B Permit Application in 1988; it was approved in May 1990 and most recently revised on February 17, 1992 (HRP, 1990). MacDermid also has an NPDES permit to discharge wastewater, first issued in 1978 (CT0024988); a Connecticut Interim Storage Permit issued in 1984 (DEP/HWM028); and a Connecticut Hazardous Waste Transporter Permit (CTW 330) (CTDEP, 1984b; CTDEP, 1985).

MacDermid, Huntingdon Avenue facility, was listed on the CERCLIS as CTD981898463 on January 1, 1987 (EPA, 1993). NUS completed a Preliminary Assessment on April 27, 1987 and issued a medium priority recommendation (NUS, 1987).

Although MacDermid has never had a comprehensive environmental assessment, it has an extensive regulatory and investigative history. CTDEP inspections and other investigative and regulatory activities are summarized in Table 3.

TABLE 3. REGULATORY AND INVESTIGATIVE HISTORY, MACDERMID, INCORPORATED, HUNTINGDON AVENUE FACILITY, WATERBURY, CONNECTICUT

Date	Activity
November 13, 1980	MacDermid submits its original Part A Hazardous Waste Notification Form (EPA, 1980).
July 7, 1984	CTDEP conducts a Hazardous Waste Inspection at the MacDermid facility. The inspection notes that MacDermid has stored MOH sludge in piles in a lagoon, but has moved the sludge across the street in 1982-1983. The inspection notes several deficiencies in the facility's waste handling procedures (several hundred drums of waste were being stored outside) (CTDEP, 1984a).
September 14, 1984	MacDermid receives an Interim Status Permit from CTDEP to operate as a hazardous waste treatment and storage facility (CTDEP, 1984b).
November 7, 1984	Order to Abate Pollution HM-217 is issued to the MacDermid facility requiring MacDermid to implement a plan to improve chemical and waste storage practices (CTDEP, 1984c).

TABLE 3. (CONTINUED)	
Date	**Activity**
February 15, 1985	A sample of MacDermid's wastewater collected by CTDEP personnel contains 5.4 ppm chromium, in excess of permit requirements (CTDOH, 1985a). MacDermid indicates it would take steps to prevent a recurrence of the problem (MacDermid, 1985).
February 18, 1985	The CTDEP reissues MacDermid's NPDES wastewater discharge permit (CTDEP, 1985). In the permit, MacDermid's discharge is specified at 60,000 gallons/day; the wastewater is discharged to the Waterbury municipal sewer system (CTDEP, 1985).
March 19, 1985	MacDermid revises its Part A application to include its current waste storage capacities (EPA, 1985).
April 25, 1985	MacDermid submits the 1984 CTDEP waste report for 72,750 gallons of mostly copper etchant and solder stripper that was later recycled (MacDermid, 1985).
May 19, 1985	Heynen Engineers conducts a hydrogeologic study of a proposed warehouse to be built at the MacDermid facility, including five test pits, thirteen soil borings, and a monitoring well. Contaminants found in the soil include tetrachloroethylene (13 ppb), oil and grease, (0.82 to 0.95 percent), chromium (0.055 ppm), copper (6.15 ppm), zinc (5.69 ppm), nickel (6.67 ppm), barium (1-3 ppm), cadmium (0.08 ppm), and lead (5.9 ppm) (Heynen, 1985). Ground water samples contained xylene (75 ppb), 1,1,1-trichloroethane (400 ppb), trichloroethylene (17 ppb), 1,1-dichloroethane (40 ppb), 1,2-dichloroethylene (50 ppb). A one-inch thick layer of black fill was found to contain 5.96 ppm lead, but this layer was not removed. These amounts were not determined to have an adverse impact on construction and the central warehouse was built with CTDEP's approval (Heynen, 1985; IPC, 1985b).
June 13, 1985	CTDEP personnel collect a split sample from the test pit with the high lead concentration. Analytical data indicated the soil had only 0.04 ppm lead, 2 ppb toluene, 2 ppb benzene (CTDOH, 1985b).
September 1986	IPC submits a closure plan for the MOH sludge lagoon at MacDermid. IPC installs a downgradient and an upgradient well (MW-1, MW-2, respectively). Analytical results from ground water samples indicates the presence of fluoride (46.5 mg/l) only in the upgradient well. The volume of waste at the lagoon is estimated to have been 1,000 cubic yards. (IPC, 1986). IPC grades the site and covers it with asphalt (IPC, 1986).

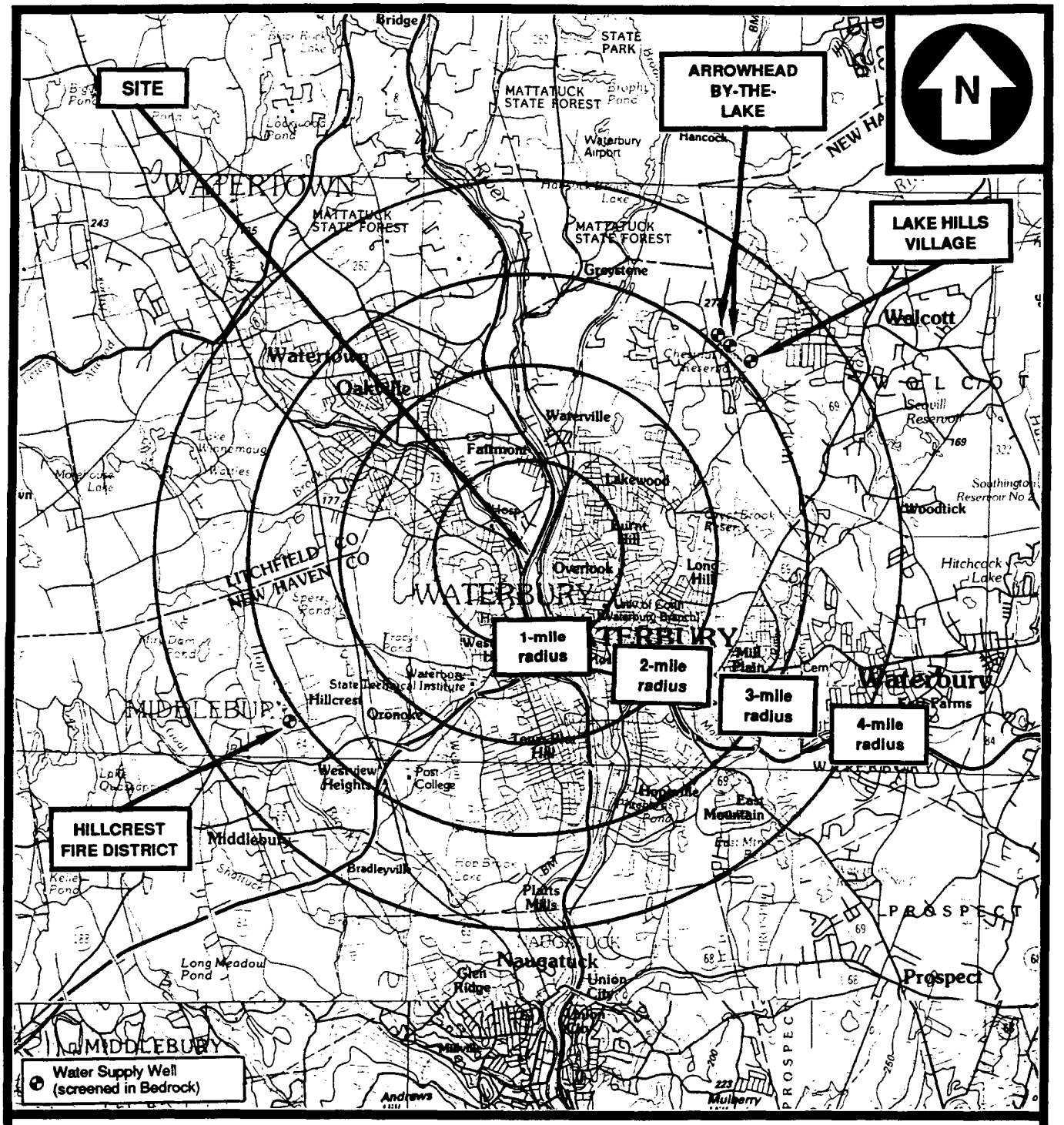
TABLE 3. (CONTINUED)	
Date	**Activity**
December 14, 1987	IPC samples a layer of soil onto which ink and ink waste had spilled. The soil layer (28" thick) contained, 1,1,1-trichloroethane (70 ppb), ethylbenzene (2,910 ppb), benzene (14,760 ppb), toluene (62,970 ppb), and xylenes (11, 450), supposedly not derived from the ink (IPC, 1987). The soil, 550 cubic feet, is excavated and replaced with clean fill .
February 16, 1987	MacDermid's 1986 Regulated Waste Report includes a total of 35,300 gallons, mostly copper etchant that was recycled (MacDermid, 1987).
April 22/24, 1987	A CTDEP Hazardous Waste Inspection Report at the MacDermid facility notes that a large-scale inventory of materials was in process and several drums of materials were poorly labeled and in poor condition. A floor sump in the ink building was found to lead to the municipal sewer system (CTDEP, 1987a).
April 29, 1987	NUS completes a CERCLA Preliminary Assessment (PA) on the MacDermid facility under CERCLA No. CTD981898463 (NUS, 1987). The MacDermid facility is entered onto CERCLIS on January 1, 1987 (EPA, 1993). The PA identifies the metal sludge lagoon as the main waste disposal area and Steele Brook as a potential surface water receptor (NUS, 1987).
December 18, 1987	MacDermid is issued a Summons to Civil Court vs. the CTDEP (State of Connecticut, 1987) for numerous violations, including improper waste storage, failure to have adequate records, closure plan, waste analysis plan and other deficiencies (State of Connecticut, 1987).
January 29, 1988	MacDermid's 1987 Regulated Waste Report identifies 280,530 gallons of waste handled and 1,705 gallons produced (MacDermid, 1988). 255,000 gallons of waste were recycled copper etchant solutions (MacDermid, 1988).
May 5, 1988	IPC detects 46 ppb benzene and 42 ppb toluene in soil samples excavated from the ink stain area (IPC, 1988a).
June 28, 1988 July 15, 1988	Samples collected from the MacDermid WWTS exceed permit requirements for cyanide (9.3 mg/l complex) and suspended solids (100 mg/l) (CTDOH, 1988).
August-September, 1988	IPC installs six soil borings in the ink pad area; only one boring contained any contamination (15 ppb toluene). The area is eventually paved over (IPC, 1988b).

TABLE 3. (CONTINUED)	
Date	**Activity**
April 20, 1989	A Motion for Stipulated Judgement is submitted to Connecticut for settlement of the CTDEP suit. In the judgement, MacDermid agrees to pay a fine of 33,000 dollars and to comply with those hazardous waste regulations that it had previously disregarded (State of Connecticut, 1989).
May 10-11-16, 1989	CTDEP conducts a Hazardous Waste Inspection Report, noting some minor labelling problems and containment problems for MOH slurry prior to dewatering (CTDEP, 1989a).
June 29, 1989	EPA requests information regarding the circumstances surrounding an ammonia release from the MacDermid air scrubber on February 2, 1989 (EPA, 1989).
October 18, 1989	CTDEP completes a NPDES Compliance Inspection at the MacDermid facility. The MOH slurry tanks required containment and lead was detected in the WWTS effluent, contrary to permit requirements (CTDEP, 1989b).
May 10, 1990	HRP Associates completes an approved version of MacDermid's RCRA Part B Permit Application (HRP, 1990).
May 21, 1990	CTDEP informs the Connecticut Attorney General of a discharge problem at MacDermid: drums of spent copper etchant were being washed on a loading dock and the waste was running into a catch basin leading to Steele Brook. The waste contained 320 mg/l copper and 5.6 mg/l lead, far in excess of permitted discharge levels. Sediment in Steele Brook was found to have 24 ppm copper at the discharge point (CTDEP, 1990a). CTDEP requests an injunction to prevent the company from continuing the practice (CTDEP, 1990a).
May 30, 1990	A CTDEP inspector notices MacDermid improperly collecting wastewater samples from the top of the treatment tank, rather than from the collection sump near the sewer discharge point and filtering samples prior to analysis (CTDEP, 1990b). MacDermid now has an automated sample collection device to prevent further occurrences (TRC, 1993).
June 28, 1990; July 10, 1990; July 27, 1990	The *Waterbury Republican* reports the following air releases: - Release of phosphoric acid and glycol from the wet scrubber - An ammonia release from WWTS tank, and - An ammonia release from copper-etchant drums (*Waterbury Republican*, 1990).

TABLE 3. (CONTINUED)	
Date	**Activity**
July 5, 1990	MacDermid revises its waste design capacity and identifies separate quantities of wastes handled by the facility, including 2,000,000 gallons/year copper etchant (EPA, 1990), 700,000 gallons ink, 250,000 gallons/year MOH sludge, copper sulfate, chlorinated solvents, resist stripper, waste acids, and plating solutions (EPA, 1990).
September 12, 1991	MacDermid submits a revised RCRA Part A Application to the EPA, increasing the volume of copper etchant to 3,390,000 gallons/year (EPA, 1991a).
February 5, 1991	MacDermid's 1990 Regulated Waste Report for 1990 records 58,568 gallons of waste handled and generated (MacDermid, 1991).
August 21, 1991	A spill report submitted to the CTDEP records a discharge of ammonia vapors within the MacDermid facility. The source is identified as the open WWTS tanks (CTDEP, 1991a).
September 12, 1991	MacDermid submits a CTDEP Notification of Hazardous Waste and TSDF Application for Permit (MacDermid, 1991).
January 14, 1992	MacDermid's 1991 Regulated Waste Report for 1991 identifies 5,170 gallons of wastes handled and generated (MacDermid, 1992).
April 7,8,10,14, 1992	CTDEP Hazardous Waste Inspection Report identifies Steele Brook as the discharge point for non-contact wastewater and the municipal system as the discharge point for treated wastes. The report also notes minor deficiencies in containment, recordkeeping, labelling, etc. (CTDEP, 1992).
February 17, 1992	MacDermid revises RCRA Part B Permit Application identifying the following recycled materials: copper etchant, solder stripper, solder conditioner, electroless copper, n-methyl pyrolle (discontinued).

4.0 ENVIRONMENTAL SETTING

The land in the vicinity of MacDermid is in a mixed industrial/residential/commercial area (Figure 3) (TRC, 1993). The soils on the MacDermid site are identified as Ur and Ud: urban land and udorthents, respectively (SCS, 1979). These are either paved areas (Ur) or artificial fill and cut and borrow areas (Ud). The nearest undisturbed soils are the Hinckley gravelly-sandy loam, located on adjacent less-developed properties (SCS, 1979). Overburden at the



BASE MAP IS A PORTION OF THE FOLLOWING 30' x 60' U.S.G.S. QUADRANGLES:
WATERBURY, CT-NY, 1885;
HARTFORD, CT-MA, 1986;
BRIDGEPORT, CT-NY, 1986;
NEW HAVEN, CT-NY, 1986

0 5,000 10,000 15,000
scale in feet

FOUR-MILE RADIUS MAP

MACDERMID, INC.- HUNTINGDON AVE. FACILITY
WATERBURY, CONNECTICUT

TRC

Figure 3.

site consists of fill over grey-brown, fine to coarse sand with a trace of gravel (stratified drift) (Heynen, 1985). This material may be capable of yielding 50-2,000 gallons/minute water and usually has a saturated thickness of at least 10 feet (Meade, 1987). The bedrock beneath the site is the Waterbury Gneiss, a Cambrian grey to dark grey, fine to medium grained schist and gneiss (Rogers, 1985). Depth to bedrock varies across the site. Across Huntingdon Avenue, at the lagoon location, on top of the small hill, depth to bedrock is 3.5 feet and approximately dips to 25 feet below grade to the south (IPC, 1986).

The nearest residence is approximately 150 feet west, across Gear Street. The nearest private drinking water well was determined from well completion reports at the Waterbury Department of Health and is approximately 0.6 miles northwest of the facility (City of Waterbury, 1993). There are at least two production wells located along East Aurora Street 0.3 to 0.5 miles west of the facility (City of Waterbury, 1993). The nearest public well system is the Arrowhead-by-the-Lake, 2.2 miles northeast (CTDOH, 1991). The Lake Hills Village well is located 2.3 miles northwest and the Hillcrest Fire District well is located 3.1 miles southwest (CTDOH, 1991).

Depth to ground water at MacDermid is approximately 33 feet and ground water flows south-southwest, toward the Naugatuck River (Heynen, 1985; TRC, 1993). Ground water in this area is classified GB, indicating that it may be used for wastewater disposal and would require treatment before being used as a public water supply (CTDEP, 1987b). There are three local public ground water supply well systems, with a total of four wells, located within four miles of the site, in the towns of Wolcott and Middlebury (Gabis (TRC), 1993b). Ground water in the immediate vicinity of the facility is largely used only for non-contact, production/cooling purposes (City of Waterbury, 1993).

The MacDermid property slopes southeast, toward the Naugatuck River (TRC, 1993; USGS, 1984a). Surface runoff from the site flows into the catch basins on East Aurora Street and then into Steele Brook, approximately 900 feet southwest (CTDEP, 1990c). MacDermid has an extensive WWTS NPDES permit for discharge to the municipal sewer system leading to the Naugatuck River, approximately 1,000 feet southeast (CTDEP, 1985; USGS, 1984a).

The Naugatuck River is classified C/B by the CTDEP, indicating that the river is contaminated with industrial pollutants (CTDEP, 1987b). The Naugatuck flows at a rate of 202 $ft.^3$/sec at Thomaston and the 15-mile downstream pathway from MacDermid ends in Seymour, Connecticut, at the Route 67 bridge (USGS, 1984a,b,c). There are no surface water intakes along the Naugatuck River downstream of MacDermid (USGS, 1984a; CTDEP, 1982). There are no designated fisheries along this section of the Naugatuck River, although fishing is not specifically prohibited (CTDEP, 1993). The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for Waterbury indicate that MacDermid is located in *Zone C, not prone to flooding* (FEMA, 1979).

MacDermid has 70 employees working two shifts at the facility (TRC, 1993). There may be one residence located within 200 feet of contaminated areas at the site. There are no schools or day care centers located within 200 feet of the site. The following cities and towns are located within four miles of MacDermid: Waterbury (population: 107,040), Watertown (20,308), Wolcott (13,573), Thomaston (6,939), Middlebury (6,087), and Plymouth (11,763) (CT Data Center, 1991).

Table 4 summarizes public water supply sources located within four miles of MacDermid. The table includes the type of supply, the approximate population served, and the location of the supply, including its direction and distance from the site. Table 5 summarizes the approximate population served by private drinking water wells for each distance ring within four miles of MacDermid. This information is derived from U.S. Census data from each town. Table 7 summarizes the population distribution of residents located within a four-mile radius from MacDermid. This data was obtained by examination of U.S. Census records from 1990.

TABLE 4. PUBLIC WATER SUPPLIES LOCATED WITHIN A FOUR-MILE RADIUS OF MACDERMID, INCORPORATED, HUNTINGDON AVENUE FACILITY, WATERBURY, CONNECTICUT

Distance Ring	Source Name	Source Type	Distance/ Direction from Site	Location	Population Served
2.0 - 3.0 miles	Arrowhead-by-the-Lake	Two bedrock wells, 250 feet deep	2.6 miles northeast	Wolcott, Connecticut	123
	Lake Hills Village	Bedrock well, 200 feet deep	2.9 miles northeast	Wolcott, Connecticut	132
Subtotal					**255**
3.0 - 4.0 miles	Hillcrest Fire District	Bedrock well, depth unknown	3.1 miles southwest	Middlebury, Connecticut	150
TOTAL					**405**

(CTDOH, 1991; Gabis (TRC), 1993b)

There are 1.4 miles of vegetated wetland frontage along the 15-mile length of the Naugatuck River (NWI, 1980a,b,c). These wetlands consist of palustrine, emergent, saturated and semi-permanent, forests and shrub-scrub environments (NWI, 1980a,b,c). There are approximately 720 acres of vegetated wetlands located within a four-mile radius of MacDermid (NWI, 1980a,b,c).

Table 6 provides a list of State- and Federally-listed threatened and endangered species located within four miles of the site. This list does not specifically identify species living along the 15-mile downstream pathway from the site, as this information is not available.

TABLE 5. PRIVATE GROUND WATER USERS LOCATED WITHIN A FOUR-MILE RADIUS OF MACDERMID, INCORPORATED, HUNTINGDON AVENUE FACILITY, WATERBURY, CONNECTICUT

Distance from the Facility	Town(s)	Population
0.00-0.25 miles	Waterbury	2
0.25-0.50 miles	Waterbury	8
0.50-1.00 miles	Waterbury Watertown	53
1.00-2.00 miles	Waterbury Watertown	481
2.00-3.00 miles	Waterbury Watertown Thomaston Plymouth Middlebury Wolcott	3,071
3.00-4.00 miles	Waterbury Watertown Thomaston Plymouth Middlebury Wolcott	6,587
TOTAL:		**10,202**

(Frost, 1993; Gabis (TRC), 1993b)

5.0 PRELIMINARY STABILIZATION EVALUATION

Preliminary information for stabilization was previous provided in Table 1. The data provided for each AOC include the following: description, start-up/closure dates, release status, regulatory criteria exceedance and off-site migration potential. Selected analytical data for this facility are discussed in Section 3.0, Site Activity/History. Original data are provided in Appendix B.

TABLE 6. THREATENED AND ENDANGERED SPECIES LOCATED WITHIN A FOUR-MILE RADIUS OF MACDERMID, INCORPORATED, HUNTINGDON AVENUE, WATERBURY, CONNECTICUT			
Common Name	**Scientific Name**	**Distance from Site**	**Status**
Great Laurel	*Rhododendron Maximum*	2.0-3.0 miles	--
Hairy Woodmint	*Blephilia hirsuta*	3.0-4.0 miles	SC
Variable Sedge	*Carex Polymorpha*	2.0-3.0 miles	E, C2

The first listing is State, the second is Federal.
SC = Species of Special Concern
E = Endangered
C2 = Candidate for Federal status, category 2.

(Kingsbury, 1993)

6.0 SUMMARY

MacDermid, Incorporated operates a recycling/reclamation and chemical blending operation at 526 Huntingdon Avenue, Waterbury, Connecticut. MacDermid has been in business at this location since 1930. MacDermid uses this facility mainly to reclaim spent copper etchant and solder stripper and to blend dry chemicals, electroless-nickel plating solutions, and inks used in the printed circuit board industry. MacDermid submitted a Part A application as a TSDF in 1980, revised most recently in 1991; and submitted an approved Part B Permit Application on May 10, 1990, most recently revised on February 17, 1992.

Before 1916, the property was owned and operated by the Metal Specialty Company. From 1916 to 1928, the site was owned and operated by the Waterbury Steel Ball Company. From 1930 to 1950, the Waterbury Steel Ball Company leased to property to MacDermid. MacDermid purchased the site in 1950 and added a warehouse in 1985.

TABLE 7. ESTIMATED DISTRIBUTION OF RESIDENTS WITHIN A FOUR-MILE RADIUS OF MACDERMID, INCORPORATED, HUNTINGDON AVENUE, WATERBURY, CONNECTICUT		
Distance from the Facility	**Town(s)**	**Estimated Population**
0.00-0.25 miles	Waterbury	509
0.25-0.50 miles	Waterbury	1,887
0.50-1.00 miles	Waterbury Watertown	7,983
1.00-2.00 miles	Waterbury Watertown	29,871
2.00-3.00 miles	Waterbury Watertown Thomaston Plymouth Middlebury Wolcott	54,619
3.00-4.00 miles	Waterbury Watertown Thomaston Plymouth Middlebury Wolcott	36,419
TOTAL:		**131,288**

(Frost, 1993; Gabis (TRC), 1993b)

The following 19 Areas of Concern (AOCs) were identified at the MacDermid facility:

- AOC #1: a metal hydroxide sludge lagoon located north of the facility, across Huntingdon Avenue, originally containing heavy metals, cyanide and unspecified organic wastes;

- AOC #2: three former waste lagoons located on site, west of the Huntingdon Avenue building, containing unspecified organic and inorganic wastes, and metal hydroxide sludge;

- AOC #3: an ink spill area, located under pavement on the north side of the Gear Street building;

- AOC #4: two underground storage tanks, one 5,000-gallon heating oil tank located on the north side of the Huntingdon Avenue building and an empty 10,000-gallon diesel fuel tank located on the east side of Huntingdon Avenue building;

- AOC #5: a steel transformer vault, located on a concrete pad in a corner on the south side of the Gear Street building.

- AOC #6: the wastewater treatment system, consisting of 13 containment and treatment tanks with a 60,000-gallon total capacity, a filter press and a metal hydroxide sludge roll-off. The system discharges to the Waterbury municipal system;

- AOC #7: four empty dry chemical silos, located on the east side of the Huntingdon Avenue building;

- AOC #8: the East Aurora Street warehouse, containing the main hazardous waste storage area, two loading docks, the spot-check QA/QC areas and the finished products storage area;

- AOC #9: the Pilot Plant, located in the north end of the Huntingdon Avenue building, containing the QA/QC and instrumentation labs, the small packaging area, and the Pilot Plant;

- AOC #10: the main mixing area, located in the center of the Huntingdon Avenue building, containing the dry chemical mixing area and formerly the location of the liquid blending area;

- AOC #11: three satellite storage areas, two in the ink manufacturing area and one in the Pilot Plant; these areas store one or two drums of waste;

- AOC #12: a flammable rack storage area, located outside between the Huntingdon Avenue and Gear Street buildings, where raw flammable chemicals are stored on a four-tiered drum rack;

- AOC #13: the chemical storage area in the Gear Street building, containing the flammable waste storage area, the combustible waste storage and the less-than-90-day storage area;

- AOC #14: the bulk waste loading and storage area, located in the west end of the Huntingdon Avenue building, containing four bulk storage spent copper etchant tanks (totalling 29,000 gallons), a loading/unloading dock; and a drum washing area;

- AOC #15: the copper etchant processing area, located in the Huntingdon Avenue building, containing 13 processing tanks leading to three 6,300-gallon finished product tanks;

- AOC #16: the ink manufacturing area, located in the center of the Gear Street building containing three roller mills, 140-gallon vats and two satellite storage areas used for the blending of inks and the temporary storage of ink wastes;

- AOC #17: the solder stripper reclaim area, located in the north end of the Gear Street building, containing three processing tanks with a total capacity of 5,000 gallons;

- AOC #18: the electroless-nickel area, located on the west side of the Gear Street building, containing eight 1,200-gallon processing tanks.

- AOC #19: the acid tank farm, located on the southwest corner of the Huntingdon Avenue building, containing five 3,000-gallon tanks of raw nitric, sulfuric and hydrochloric acid, and hydrogen peroxide.

Documented releases from the MacDermid facility include contamination of surface soil, ground water and surface water. From at least 1972 to 1978, MacDermid used a wastewater treatment system that used two lagoons to settle inorganic and organic wastes before the liquid was discharged to the municipal sewer system. In 1978, these two lagoons were excavated and the materials were deposited in a lagoon located across Huntingdon Avenue. From 1978 to 1980, MacDermid used a wastewater treatment system which filter pressed metal hydroxide slurry. The liquids were discharged to the municipal sewer system, and the pressed sludge was stored in a new lagoon next to the Huntingdon Avenue building. In 1980, MacDermid purchased a 26-cubic-yard roll-off container for metal hydroxide sludge storage. The on-site lagoon was excavated in 1982-1983 and 168 cubic yards of sludge and soil were sent to a landfill.

In 1984, CTDEP issued Order to Abate Pollution HM-217 to the MacDermid Huntingdon Avenue facility. MacDermid hired IPC, Inc. in 1985 to assist in bringing MacDermid into

compliance with the order. IPC submitted a report of past waste disposal practices to CTDEP in February 1985. In May 1985, Heynen Engineers, Inc. was hired to investigate the site of a proposed warehouse. Soil borings and one monitoring well were installed in the area. Evidence of soil and ground water contamination were discovered, but not in concentrations high enough to warrant further investigation or remediation of the site, and the warehouse was built.

IPC, Inc. submitted a closure plan for the waste lagoon located across Huntingdon Avenue in 1986. IPC's investigation determined that fluoride was the only contaminant present in significant quantities in ground water. IPC recommended that the site be covered with asphalt. In 1987, IPC sampled an area under a concrete pad where ink-stained soil had been discovered. Evidence of soil contamination by benzene, xylene, toluene, and 1,1,1-trichloroethane was discovered. IPC had 550 cubic feet of soil removed in 1988.

In 1990, the CTDEP discovered two discharge and monitoring problems at MacDermid. Water from drum washing at the Huntingdon Avenue building loading dock was being discharged to catch basins leading to Steele Brook. The water contained excess copper and lead. MacDermid arranged for the drum washing area to lead to the wastewater treatment system and for the catch basins to be covered. The CTDEP also discovered that MacDermid had been collecting wastewater effluent samples from the top of the tank and had been filtering the samples, thus eliminating excess metals. An automatic sampling unit was installed to eliminate this practice.

The only areas of concern that have analytical data to support a release to the environment are the metal hydroxide sludge lagoon, the ink spill area, the wastewater treatment system, and the bulk waste loading and storage area. The wastewater treatment system has occasionally had discharge problems with excess copper, chromium, and cyanide.

Potential receptors of contamination from the MacDermid, Inc. facility include the following:

- Approximately 63 residents within one mile of the property who may receive their drinking water from private wells;
- Approximately 131,288 people living within a four-mile radius of the property.
- Steele Brook;
- The Naugatuck River;
- Animal and plant species that inhabit the 15-mile downstream pathway from the property; and
- Approximately 720 acres of vegetated wetlands within a four-mile radius of the property and 1.4 miles of wetland frontage along the 15-mile downstream pathway.

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APPENDIX A

AREAS OF CONCERN

AOC Number: 1

AOC Name: MOH Sludge and Waste Lagoon

AOC Status: Release

AOC Description:

This AOC is an unlined, asphalt-capped rectangular area approximately 50 feet wide by 95 feet long (TRC, 1993; IPC, 1986). The lagoon was created as a disposal area for sludge and soil excavated from two other MacDermid lagoons in 1978 (CTDEP, 1987a; IPC, 1986). Approximately 1,000 cu. yds. of unspecified organic, inorganic and metal hydroxide (MOH) wastes were discharged to the lagoon in 1978 (IPC, 1986). The lagoon was paved in 1986 (IPC, 1986). The lagoon is located on a bedrock ledge across Huntingdon Avenue, on MacDermid property (TRC, 1993). The asphalt is worn on the edges and cracked in several places (TRC, 1993).

AOC Start-Up Date: 1978 (CTDEP, 1987a)

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

This lagoon received sludge and soil from two lagoons that had existed at the MacDermid facility since at least 1972 (CTDEP, 1987a). The lagoons were used to settle solid waste, while the decanted liquid was discharged to the municipal sewer system (Gabis (TRC), 1993c). One lagoon was used for miscellaneous organic wastes and the other for inorganic wastes, chiefly MOH sludge (CTDEP, 1987a). In 1978, these two lagoons were excavated and their contents were discharged to the lagoon across the street (CTDEP, 1987a; IPC, 1986). Metal hydroxide sludge from MacDermid could contain chromium, lead, copper, nickel, iron, silver and cyanide (MacDermid, 1993a,b).

Release Controls:

The lagoon was not capped until 1986; before that surface and ground water could easily penetrate the lagon and distribute contaminants (IPC, 1986). After the asphalt cap was installed, surface water discharge was controlled, but ground water could still percolate through. Cracks in the asphalt currently allow some surface water penetration (TRC, 1993).

Release History:

Known Releases:

There is evidence of a release to soil and ground water, considering that the lagoon is unlined and samples from a nearby well indicated elevated fluoride levels (IPC, 1986).

Release Evidence:

IPC conducted an investigation of the lagoon in 1986. Contaminants detected in the lagoon soil included cadmium (0.02-0.04 ppm), chromium (0.19-0.24 ppm) and silver (0.13 and 0.14 ppm) (IPC, 1986). Ground water samples collected in 1986 contained 46 ppm fluoride in MW-1 (IPC, 1986). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 2

AOC Name: Former Waste Lagoons (3)

AOC Status: High potential for release

AOC Description:

This AOC is presently a paved area on the east side of the Huntingdon Avenue building (CTDEP, 1984; CTDEP, 1987a). From at least 1972 to 1978 two waste lagoons (one organic and one inorganic) were used as discharge areas for MacDermid's process waste. The solids precipitated into the lagoons, while the liquids were decanted and discharged to the municipal sewer system (Gabis (TRC), 1993c). These two lagoons were excavated in 1978, but a new lagoon (AOC #1) was placed nearby to receive MOH sludge from the new WWTS (CTDEP, 1987a; CTDEP, 1989). In 1982-1983 approximately 168 cu. yds. of sludge and soil were excavated from this area and sent to the Archer Landfill in Shelton, CT (CTDEP, 1987a; CTDEP, 1984). After 1982, MacDermid used drums and a roll off container to store MOH sludge (CTDEP, 1989).

AOC Start-Up Date: 1972 (CTDEP, 1987a)

AOC Closure Date: 1982-1983 (CTDEP, 1987a)

Wastes Managed at AOC:

This AOC received unspecified organic and inorganic wastes from at least 1972 to 1978. From 1978 to 1980, another lagoon received MOH sludge, potentially containing copper, lead, nickel, chromium, iron, silver and cyanide (CTDEP, 1987a; MacDermid, 1993a,b).

Release Controls:

The area is now completely paved, so no surface water can enter or flow past it. However, the lagoons were not lined and potential exists for ground water contamination (TRC, 1993).

Release History:

Known Releases:

There is no information documenting a release from this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental Organic Vapor Meter (OVM) Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 3

AOC Name: Ink Spill Area

AOC Status: Release

AOC Description:

This AOC comprises an area of stained soil located, outside, near a former ink spill collection sump in the north end of the Gear Street building (CTDEP, 1989; IPC, 1988a,b). The area was discovered in 1987 by IPC personnel (IPC, 1987). After investigation of the spill area, the CTDEP ordered the area to be excavated. Approximately 550 cu. ft. of soil were removed in 1988 (IPC, 1988a,b). The area is now completely paved (TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: 1988 (IPC, 1988a,b)

Wastes Managed at AOC:

This AOC received ink waste from a leak in the former collection sump (IPC, 1988a,b; CTDEP, 1989). The area contained waste pigments, solvents, anilines, resins, and polymers used in ink blending (IPC, 1988a,b; IPC, 1987; MacDermid, 1993a,b).

Release Controls:

There were initially no controls on this AOC; waste could migrate through ground water and surface water could carry it off site. Since the site has been excavated and paved, however, the potential for release has been reduced (IPC, 1988a,b; TRC, 1993).

Release History:

Known Releases:

This AOC was created when waste was released from a collection sump. Release was established with the collection of soil samples that were found to contain contaminants (IPC, 1987; IPC, 1988a,b).

Release Evidence:

Soil samples collected from the area indicated the presence of toluene (62,970 ppb), 1,1,1-trichloroethane (70 ppb), ethyl benzene (2,910 ppb), and xylene (11,450 ppb) (IPC, 1988a,b). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 4

AOC Name: Underground Storage Tanks (2)

AOC Status: Low potential for release

AOC Description:

This AOC consists of a 5,000-gallon underground storage tank for heating oil located on the north side of the Huntingdon Avenue building and a 10,000-gallon fuel oil tank located on the east side of the Huntingdon Avenue building (TRC, 1993). The 10,000-gallon tank is currently empty (TRC,1993).

AOC Start-Up Date: Unknown

AOC Closure Date:

The 5,000-gallon tank is currently active, while the 10,000-gallon tank is empty (TRC, 1993).

Wastes Managed at AOC:

The 5,000-gallon tank contains heating oil (TRC, 1993).

Release Controls:

The materials are contained by the walls of the tank. The tanks are tight-tested every year (TRC, 1993).

Release History:

Known Releases:

There is no history of release from this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 5

AOC Name: Transformer Vault

AOC Status: Low potential for release

AOC Description:

This AOC consists of a four-by-four-by-four-foot steel vault containing a 2,000-amp, 240-volt electrical transformer (CTDEP, 1984). The vault is set on a concrete pad in a corner on the south side of the Gear Street building (TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: Current

Wastes Managed at AOC:

The only waste contained by this AOC is transformer oil, containing polychlorinated biphenyls (PCBs).

Release Controls:

The transformer contents are contained by the steel housing and by the concrete base on which it is set (TRC, 1993).

Release History:

Known Releases:

There is no history of release associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 6

AOC Name: WWTS

AOC Status: Release

AOC Description:

This WWTS is located in the southwest corner of the Huntingdon Avenue building. It consists of eight 15,000-gallon holding tanks, two 3,000-gallon MOH slurry tanks, 17,000-gallon and 8,000-gallon treatment tanks, a 12,000-gallon equalization tank, a 15-cubic foot filter press and a 26-cubic yard MOH sludge roll-off container, with a total capacity of 60,000 gallons per day (HRP, 1990). The tanks are either steel, concrete or fiber-reinforced plastic (FRP) and are set on an epoxy-coated concrete floor (HRP, 1990; TRC, 1993). Spills from the system are sent through the WWTS again via floor drains (HRP, 1990). The tanks are also connected to a wet scrubber to remove vapors (generally ammonia) generated during treatment. The eight 15,000-gallon tanks are approximately 30 feet tall, with concrete walls four to five inches thick and are open at the top. These tanks are adjacent to the building, with a plastic roof (TRC, 1993).

AOC Start-Up Date:

From at least 1972 to 1978, the WWTS consisted of two settling lagoons. The lagoons were used to precipitate solids, while liquids were decanted and discharged to the municipal sewer system (Gabis (TRC), 1993c). This WWTS was installed without a sludge roll-off container in 1978. The sludge roll-off container was added in 1980 (CTDEP, 1987a; HRP, 1990).

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The WWTS handles waste liquids from the copper etchant, solder stripper, electroless-nickel, dry chemical blending areas and spills from the hazardous waste storage areas (HRP, 1990).

Release Controls:

Possible spills prior to treatment system, are contained by floor trenches, which drain to the holding tanks. The treatment tanks are surrounded by a 3.5-inch epoxy-coated concrete berm, as are the slurry tanks and the filter press (CTDEP, 1992; HRP, 1990; TRC, 1993). The sludge roll-off container is contained in a concrete shed, with a two-foot-seven-inch concrete berm at the door (HRP, 1990; TRC, 1993). The wet scrubber controls vapor emissions from the treatment tanks, but not the holding tanks (CTDEP, 1990c; CTDEP, 1992).

Release History:

Known Releases:

MacDermid's WWTS is designed to discharge to the Waterbury Municipal Sewer System (HRP, 1990; CTDEP, 1990c). There have been three recorded instances of permit violations from the WWTS. In addition, in 1990, there were documented vapor releases from the wet scrubber and holding tanks (*Waterbury Republican*, 1990).

Release Evidence:

In 1985, the CTDOH detected excess chromium (5.4 ppm) and in 1988 excess cyanide (9.3 ppm) and suspended solids (100 mg/l) (CTDOH, 1985a; CTDOH, 1988). In 1990, MacDermid was cited for improperly collecting and filtering samples, potentially casting all previous data into question (CTDEP, 1990b). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 7

AOC Name: Dry Chemical Silos (4)

AOC Status: Low potential for release

AOC Description:

This AOC is located on the east side of the Huntingdon Avenue building and consists of four upright 10,000-gallon steel silos, set on a concrete pad (TRC, 1993). The silos were used to store dry chemicals, but are currently empty (TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The silos were used to store dry sodium carbonate, sodium metasilicate, sodium hydroxide, and sodium hydrogen sulfate (HRP, 1990).

Release Controls:

The tanks are made of steel and set on a concrete pad (TRC, 1993).

Release History:

Known Releases:

There is no history of release associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 8

AOC Name: East Aurora Street Warehouse

AOC Status: Low potential for release

AOC Description:

This concrete warehouse contains the Main Hazardous Waste Storage Area, the spot-check QA/QC area, two loading docks and the finished products storage area (HRP, 1990; TRC, 1993). The entire building has an epoxy-coated concrete floor. The Main Hazardous Waste Storage Area, located on the north end of the warehouse, can hold up to 77,000 gallons of waste in drums, on five-tier racks in a 92-foot by 42-foot room (HRP, 1990). This area is surrounded by a 3.5-inch concrete berm and has a 200-gallon collection sump, from which spills can be containerized or sent through the WWTS (HRP, 1990). The loading dock near the Main Hazardous Waste Storage area is not bermed; however, catch basins in the driveway are covered during loading/unloading operations (HRP, 1990). The finished products storage area is in the west side of the warehouse and stores drums of saleable products on a five-tier drum rack prior to shipment (HRP, 1990). The shipping and receiving area along East Aurora Street has a loading dock with a spot check, QA/QC area. This area has a sloped floor leading to floor drains in the interior of the building and a 3.5-inch concrete berm at the garage door (HRP, 1990).

AOC Start-Up Date: The warehouse was built in 1985-1986 (IPC, 1985).

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The warehouse contains finished copper etchant, solder stripper, electroless-nickel solutions, and inks. It also contains all non-flammable, non-combustible wastes, such as waste oil, nitrates, cyanide, crushed drums, etc. (MacDermid, 1993a,b).

Release Controls:

The materials in the warehouse are contained by the building walls, by concrete berms and by sloping floors leading to drains connected to the WWTS (HRP, 1990). The catch basins located in the driveway are covered during loading/unloading operations and during spot checks (HRP, 1990).

Release History:

Known Releases: There is no history of release associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 9

AOC Name: Pilot Plant (including QA/QC Labs and Small Packaging Area)

AOC Status: Low potential for release

AOC Description:

The Pilot Plant area is located in the northeast end of the Huntingdon Avenue building and consists of the Pilot Plant, the QA/QC labs and the small packaging area. The Pilot Plant makes small 100-200 gallon batches of products for testing and for customer samples. the entire area has an epoxy-coated concrete floor (HRP, 1990). The QA/QC labs are small testing and research rooms north of the Pilot Plant. The small packaging area is southeast of the Pilot Plant. It is a four-tier drum storage area where small amounts (55 gallons) of finished products are stored prior to shipment (HRP, 1990; TRC, 1993).

AOC Start-Up Date:

The Pilot Plant was moved to this building from the Gear Street building in 1992 (CTDEP, 1992). It is not known when the other areas were begun.

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

These areas experiment with, manufacture, or store small quantities of all the MacDermid products at this facility. These materials would therefore include copper etchant, solder stripper, inks, electroless-nickel plating solution, dry batch chemicals (including packaged cyanide salts) and the components of these materials (HRP, 1990; CTDEP, 1992).

Release Controls:

Spills from the Pilot Plant are led into a collection sump which can either be pumped out into drums or fed into the WWTS (HRP, 1990). The small packaging area is contained by the building walls (TRC, 1993). The QA/QC labs contain spills with the walls of the rooms. Waste from this area is usually stored in containers, then transferred to the satellite storage area located in the Pilot Plant (HRP, 1990).

Release History:

Known Releases:

There are no known releases from this area; however, the QA/QC labs were cited for generally poor waste management (CTDEP, 1984, CTDEP, 1987a).

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 10

AOC Name: Main Mixing Area

AOC Status: Low potential for release

AOC Description:

This area is located in the central part of the Huntingdon Avenue building. Batches of dry chemicals, including metal cyanide salts, are repackaged from 55-gallon drums into smaller units for sale (HRP, 1990). The area was formerly used to blend copper plating solution (CTDEP, 1989). The area has an epoxy-coated concrete floor, floor drains to the WWTS, and a dust collector (CTDEP, 1992).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

Wastes generated from this area included dust from the chemicals and drum washwater (CTDEP, 1992; HRP, 1990).

Release Controls:

Spills in the area are fed into the WWTS. Water from drum cleaning is fed into the WWTS via floor drains. Dust is collected by dust collectors and water used to clean these collectors is also sent to the WWTS (HRP, 1990; CTDEP, 1992).

Release History:

Known Releases: There is no release history associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 11

AOC Name: Satellite Storage Areas (3)

AOC Status: Low potential for release

AOC Description:

Satellite storage areas are located in the Pilot Plant (one) and the ink manufacturing area (2) (HRP, 1990). Each area contains one or two 55-gallon drums, surrounded by a four-inch, epoxy-coated angle-iron berm bolted to the floor (HRP, 1990). The drums are gradually filled with compatible wastes and are removed and replaced when they are filled (HRP, 1990).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

Satellite storage areas contain drums of mixed waste. The ones in the ink manufacturing area largely contain waste ink rags, solvents, and pigments, while the one in the Pilot Plant contains miscellaneous plating solution, solvents, acids and other materials connected to the QA/QC labs (HRP, 1990; CTDEP, 1992).

Release Controls:

The satellite storage areas are contained by the four-inch angle-iron berms (HRP, 1990).

Release History:

Known Releases: There is no history of release associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 12

AOC Name: Flammable Rack Storage

AOC Status: High potential for release

AOC Description:

The Flammable Rack Storage area consists of an outdoor, four-tier drum rack, approximately 40 feet high, 25 feet deep and 40 feet long (TRC, 1993). Raw flammable chemicals are stored secured in drums on the rack, on the grass between the Gear Street and Huntingdon Avenue buildings (TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

Materials stored in this AOC include raw flammable chemicals such as alcohols, solvents, acetone, etc. (MacDermid, 1993a,b).

Release Controls:

The drums are secured to the rack and the rack is outside (TRC, 1993). There are fire hydrants nearby, but there is no spill containment. Catch basins in the driveway could channel spills to Steele Brook or spills might be absorbed by the soil on which the rack is set (TRC, 1993).

Release History:

Known Releases: There is no history of release from this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 Ev lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 13

AOC Name: Chemical Storage Area: Gear Street Building

AOC Status: Low potential for release

AOC Description:

The Chemical Storage Areas in the Gear Street building consist of three sections: the less-than-90-day storage area, the flammable storage area and the combustible storage area. The entire building has an epoxy-coated concrete floor (HRP, 1990; TRC, 1993). The less-than-90-day storage area is located in the southwest corner of the building. It was formerly the N-methyl pyrolle recycling room. The area is a drum storage area, approximately 40 feet long and 25 feet wide, with a four-inch epoxy-coated angle-iron berm (HRP, 1990; TRC, 1993). The flammable storage area is located in the northern end of the building, along the eastern wall. It is designed to store up to 16 drums of waste in an eight-foot by ten-foot area and is surrounded by a four-inch angle-iron berm (HRP, 1990). Outside the bermed area are trenches leading to the WWTS (HRP, 1990). The combustible storage area is located in the south end of the building. It is designed to store 54 55-gallon drums and four 330-gallon storage totes (HRP, 1990). This area is surrounded by a four-inch epoxy-coated angle-iron berm (HRP, 1990).

AOC Start-Up Date:

The less-than-90-day storage area was opened in 1992; the start-up dates for the other areas are not known (CTDEP, 1992).

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The less-than-90-day area may store non-combustible, non-flammable wastes such as ink waste, copper and other sulfates, filters, and tin or copper chloride (CTDEP, 1992). It was formerly used to store N-methyl-pyrolle (HRP, 1990; TRC, 1993). The flammable storage area is used to store waste flammable solvents such as acetone, isopropanol, methanol, and ether (MacDermid, 1993a,b). The combustible storage area is used to contain combustible materials such as acetate, anilines, and acrylimides (MacDermid, 1993a,b).

Release Controls:

The areas are all contained by the walls of the rooms, the epoxy-coated concrete floor, and the four-inch, epoxy-coated angle-iron berms (HRP, 1990; TRC, 1993). In addition, the flammable storage area is connected to the WWTS by floor drains just outside the bermed area (HRP, 1990).

Release History:

Known Releases: There no release associated with this AOC.

Release Evidence:

No analytical data exist to document a release from this AOC. No detections were noted with the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp, during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 14

AOC Name: Bulk Waste Loading and Storage Area

AOC Status: Release

AOC Description:

This area is the main entrance for the loading and unloading of copper etchant at the MacDermid facility. It is located on the northwest end of the Huntingdon Avenue building and consists of the loading dock, the bulk spent copper etchant storage tanks, and the drum washing area (HRP, 1990; CTDEP, 1990a; TRC, 1993). There are four bulk storage tanks, three 8,000-gallons and one 5,000 gallon used to hold spent copper etchant after it has been unloaded from tanker truck or drums at the loading dock (HRP, 1990; CTDEP, 1990a). The loading dock is used to wash drums after unloading. The entire area has an epoxy-coated concrete floor (HRP, 1990; TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

Virtually the only waste managed here is spent copper etchant (HRP, 1990).

Release Controls:

The bulk storage tanks are surround by a two-foot-seven-inch epoxy-coated concrete berm (HRP, 1990). The loading dock has a floor that slopes toward the interior of the building and which channels water to a collection sump and from there to the WWTS (HRP, 1990). The catch basins outside the building are now covered during drum washing and loading/unloading operations (CTDEP, 1992; HRP, 1990).

Release History:

Known Releases:

On February 10, 1990, a CTDEP inspector noticed that water from the drum washing operation was being allowed to flow into the catch basins leading to Steele Brook (CTDEP, 1990a). The CTDEP requested an injunction from the State Attorney General to stop the practice (CTDEP, 1990a).

Release Evidence:

Samples collected from the wash water contained 320 ppm copper and 5.6 ppm lead and the sediment at the outfall into the brook contained 24 ppm copper (CTDEP, 1990a). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 15

AOC Name: Copper Etchant Processing Area

AOC Status: Low potential for release

AOC Description:

This area is located in the west-central section of the Huntingdon Avenue building (TRC,1993). It contains 13 processing tanks that receive up to 3,000,000 gallons per year of spent copper etchant and recycle it to useable product. The processing tanks all rest on an epoxy-coated concrete floor and lead to three 6,300-gallon finished product tanks adjacent to the loading dock (HRP, 1990).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC: This area processes spent copper etchant (HRP, 1990).

Release Controls:

Although this area is not bermed, all the spills are channeled to floor drains leading directly to the WWTS (HRP, 1990).

Release History:

Known Releases: There is no history of release from this AOC.

Release Evidence:

No analytical evidence exists to document a release of hazardous materials from this AOC. No detections were noted with the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp, during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 16

AOC Name: Ink Manufacturing Area

AOC Status: Low potential for release

AOC Description:

This area is located in the center of the Gear Street building. It contains tanks and equipment necessary for the blending of inks for the printed circuit board industry. The area contains three roller mills for the crushing of dry pigment powders and a series of 140-gallon vats for the blending of the pigments with solvents, acrylimides anilines, resins and other materials necessary to make ink (CTDEP, 1984; CTDEP, 1987a, CTDEP, 1989, CTDEP, 1990c; CTDEP, 1992).

AOC Start-Up Date: Unknown

AOC Closure Date: Current

Wastes Managed at AOC:

The materials managed at this AOC include resins, polymers, anilines, solvents, powder pigments, solvents and acrylimides (CTDEP, 1992; CTDEP, 1987a, MacDermid, 1993a).

Release Controls:

This area is contained by the epoxy-coated concrete floor and by the walls of the room. Spills are mopped up with rags and these are stored in the satellite storage areas in this building, along with waste solvents, pigments, and polymers (CTDEP, 1990c). There used to be a collection sump at the north end of the building that discharged to the municipal sewer system and also leaked to the soil, but that is now closed (CTDEP, 1990c).

Release History:

Known Releases:

There are no release directly associated with this AOC. For information concerning the former collection sump, see AOC #3, Ink Spill Area.

Release Evidence:

No analytical evidence exist to document a release from this AOC. No detections were noted with the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 17

AOC Name: Solder Stripper Reclaim Area

AOC Status: Low potential for release

AOC Description:

This area is located in the northwest end of the Gear Street building. Spent solder stripper is pumped from loading docks on the north end of the building into a 3,000-gallon settling tank (HRP, 1990). After lead fluoride precipitates out and is collected in drums, the liquid is pumped through two 1,000-gallon electrolytic cells, two 1,500-gallon poly tanks and a filter press (HRP, 1990). This entire operation is conducted on a sloping epoxy-coated concrete floor leading to floor drains connected to the WWTS (HRP, 1990).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The main waste managed at this AOC are spent solder stripper.

Release Controls:

Spills in this area are contained by the walls of the room and by the floor drains leading to the WWTS (HRP, 1990).

Release History:

Known Releases: There is no history of release associated with this AOC.

Release Evidence:

No analytical evidence exist to document a release from this AOC. No detections were noted using the Thermoenvironmental OVM Model 501-A, 10.2 eV lamp, during TRC's VSI, May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 18

AOC Name: Electroless-Nickel Area

AOC Status: Low potential for release

AOC Description:

This area is located along the western wall of the Gear Street building. It is a manufacturing area for electroless-nickel plating solutions and contains eight tanks, with a capacity of up to 1,200-gallons that process up to 3,000 gallons of product per week (CTDEP, 1992). This area has an epoxy-coated concrete floor and a floor trench for spills. The liquid in the floor trench is tested for nickel; liquid containing nickel is filtered before being added to the WWTS (CTDEP, 1992). There is also a wet scrubber in this area to eliminate ammonia vapors generated during manufacture (CTDEP, 1992).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The wastes managed in this area consist mainly of nickel solution and ammonia (CTDEP, 1992).

Release Controls:

Spills in this area are contained by the walls, by the concrete floor, by the wet scrubber and by the floor trench designed to collect spilled nickel solutions (CTDEP, 1992).

Release History:

Known Releases: There is no history of release associated with this AOC.

Release Evidence:

No analytical evidence exists to document a release from this AOC. No detections were noted with the Thermoenvironmental OVM, Model 501-A, 10.2 eV lamp, during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

AOC Number: 19

AOC Name: Acid Tank Farm

AOC Status: Low potential for release

AOC Description:

The Acid Tank Farm is a set of five 3,000-gallon steel tanks containing raw hydrochloric acid, sulfuric acid, nitric acid, and hydrogen peroxide (TRC, 1993; Gabis (TRC), 1993c). This area is located outside, on the southwest side of the Huntingdon Avenue building (TRC, 1993). The tanks are set on asphalt, but are surrounded by a 2-3 foot concrete berm and fence (TRC, 1993).

AOC Start-Up Date: Unknown

AOC Closure Date: Currently in use.

Wastes Managed at AOC:

The materials managed at this AOC included hydrochloric, nitric, and sulfuric acid and hydrogen peroxide (TRC, 1993).

Release Controls:

Spills from this area are contained by the concrete berm (TRC, 1993).

Release History:

Known Releases: There is no history of release associated with this AOC.

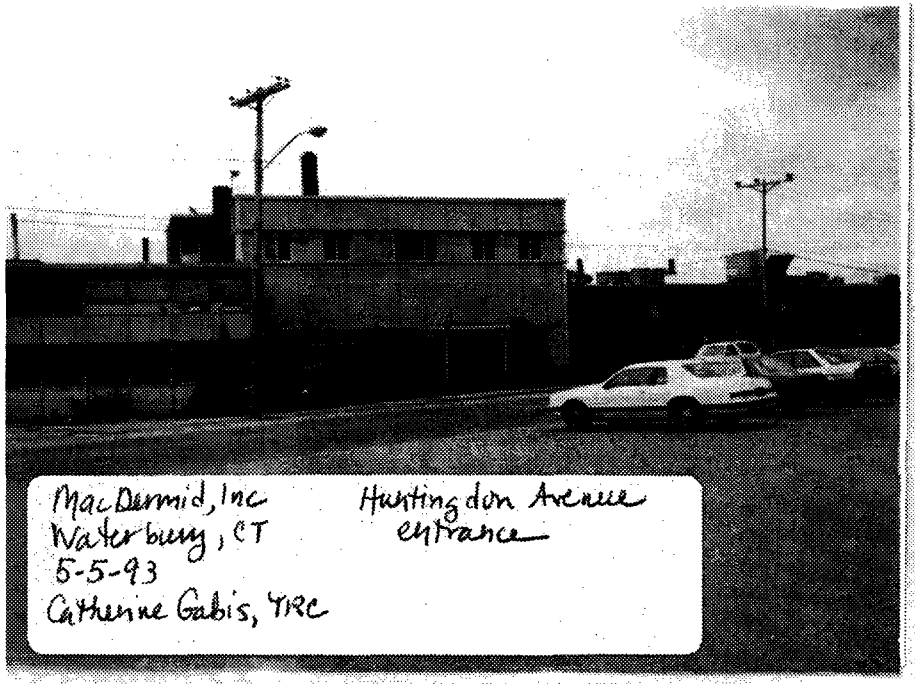
Release Evidence:

No analytical evidence exists to document a release from this AOC. No detections were noted with the Thermoenvironmental OVM, Model 501-A, 10.2 eV lamp, during TRC's VSI on May 5, 1993 (TRC, 1993). Information pertaining to the volume, toxicity, and mobility of wastes at this AOC is not available.

APPENDIX B

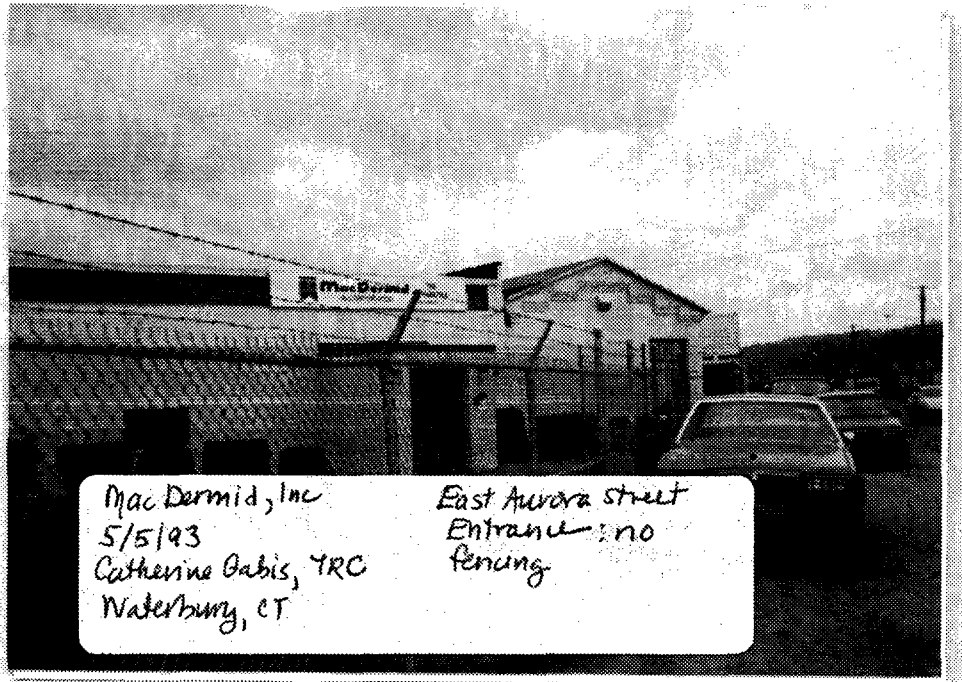
SELECTED PAST REGULATORY INFORMATION AND INVESTIGATIVE DATA

C-LINE #52564
35MM PRINTS



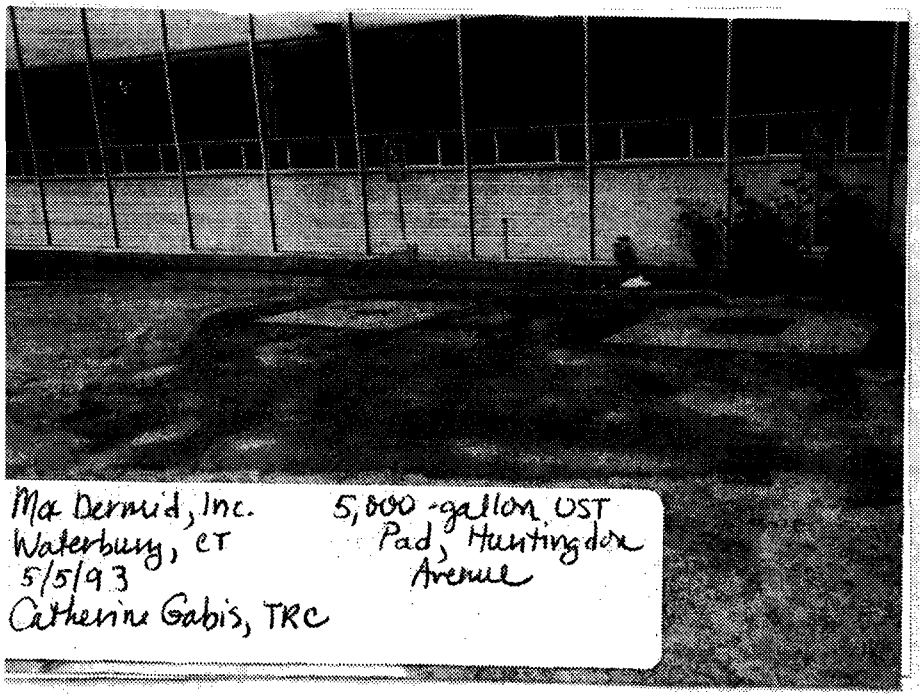
MacDermid, Inc
Waterbury, CT
5-5-93
Catherine Gabis, TRC

Huntingdon Avenue entrance



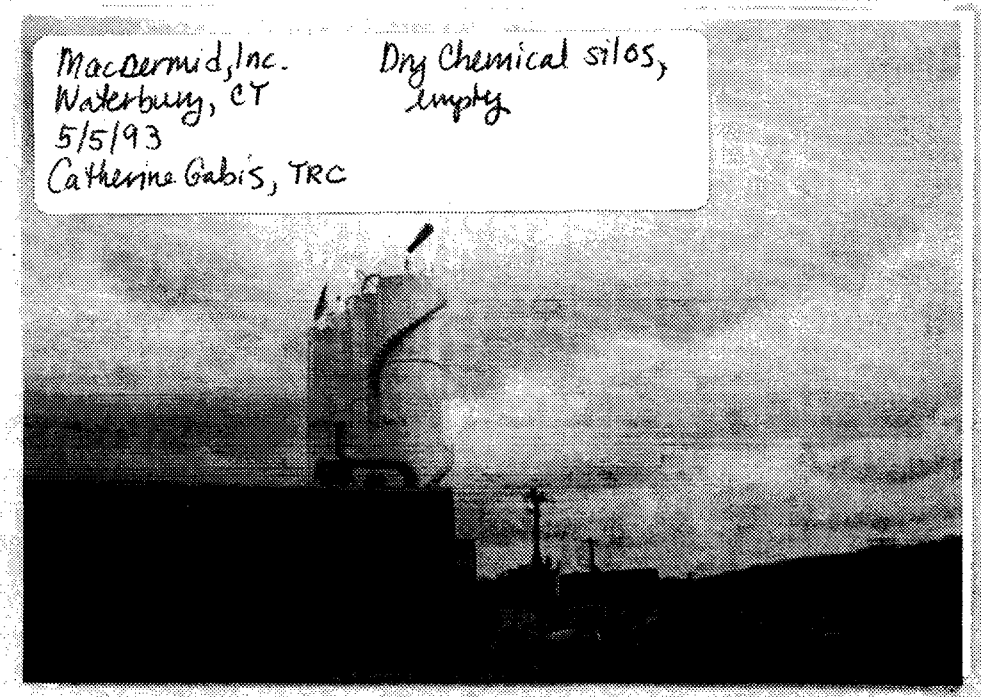
MacDermid, Inc
5/5/93
Catherine Gabis, TRC
Waterbury, CT

East Aurora Street Entrance; no fencing



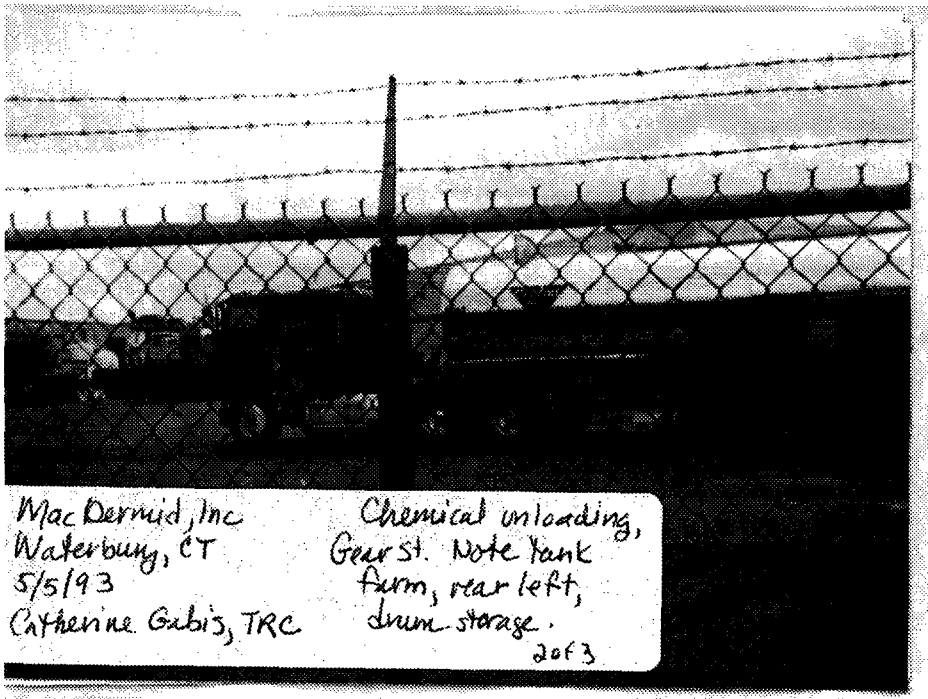
Mac Dermid, Inc.
Waterbury, CT
5/5/93
Catherine Gabis, TRC

5,000-gallon UST Pad, Huntingdon Avenue



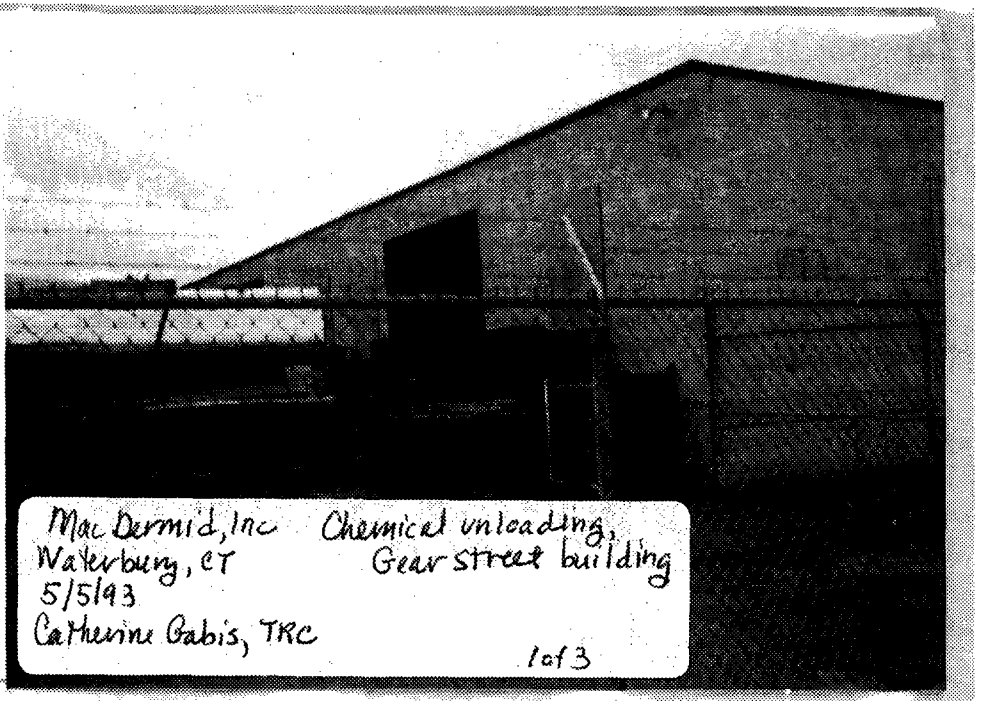
MacDermid, Inc.
Waterbury, CT
5/5/93
Catherine Gabis, TRC

Dry Chemical silos, empty



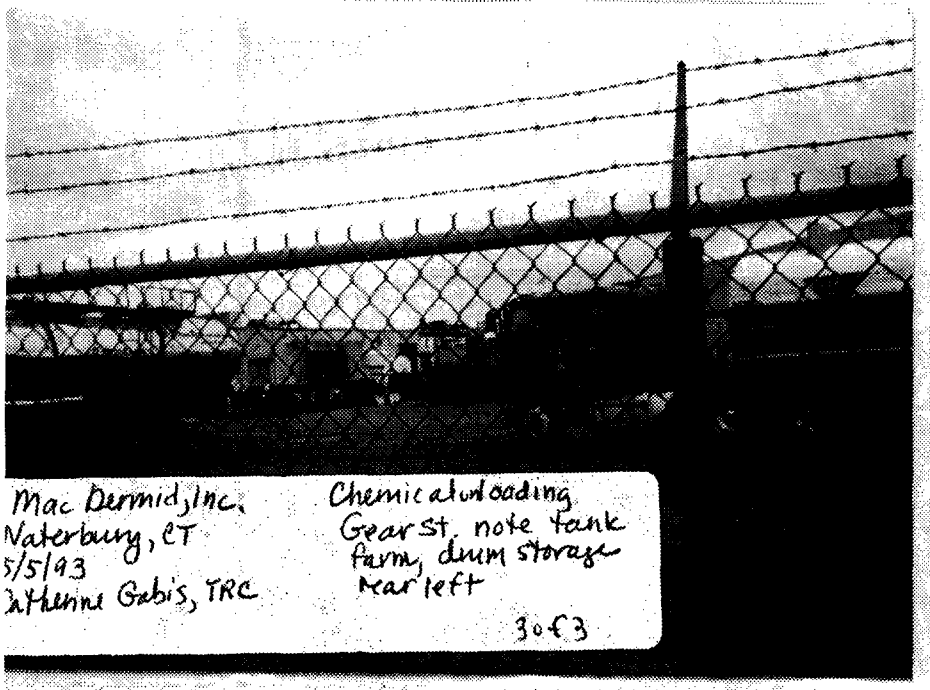
Mac Dermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

Chemical unloading,
Gear St. Note tank
farm, rear left,
drum storage.
2 of 3



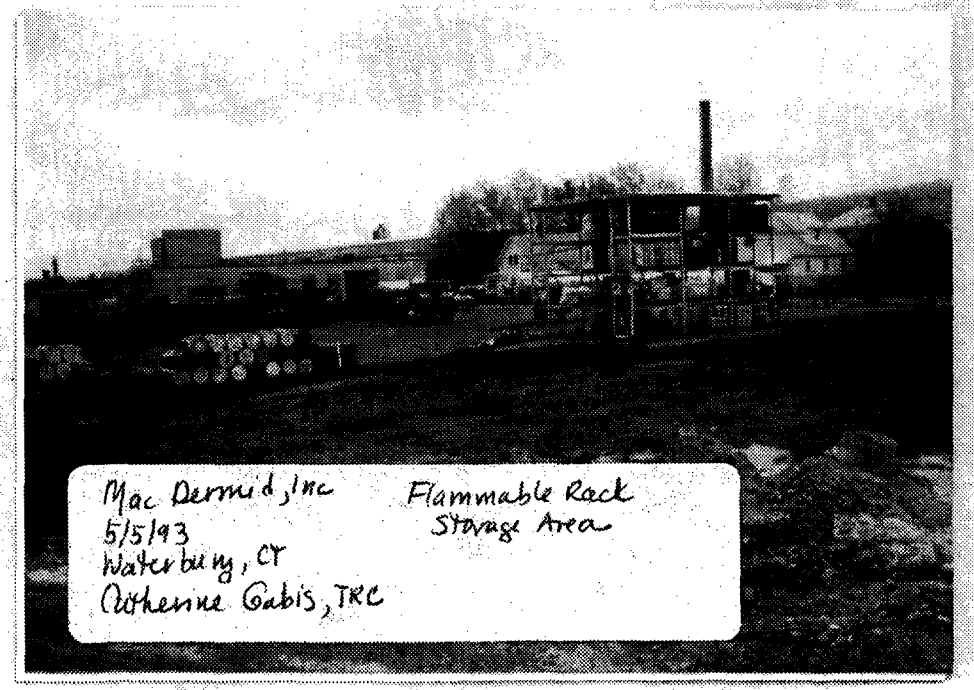
Mac Dermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

Chemical unloading,
Gear street building
1 of 3



Mac Dermid, Inc.
Waterbury, CT
5/5/93
Catherine Gabis, TRC

Chemical unloading
Gear St. note tank
farm, drum storage
rear left
3 of 3



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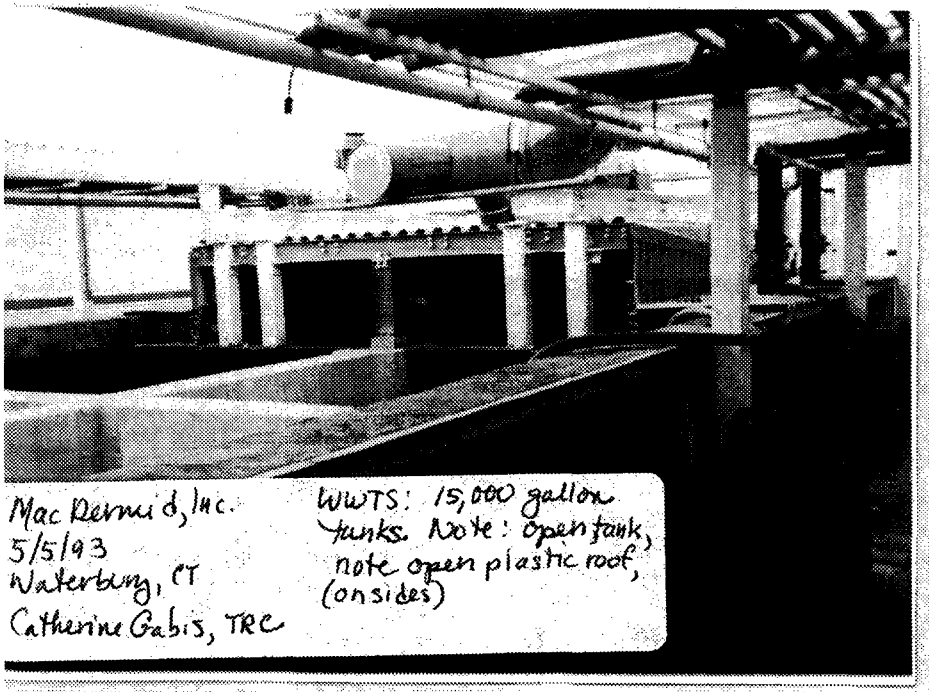
Waterbury, CT
Catherine Gabis, TRC

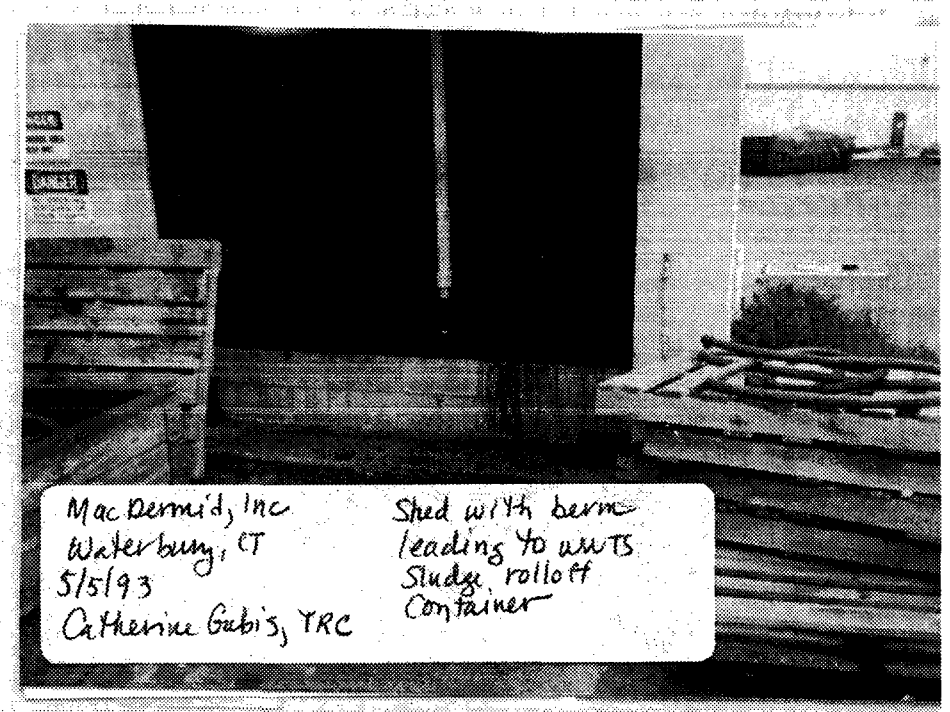
Flammable Rack
Storage Area

C-LINE #52584
35MM PRINTS



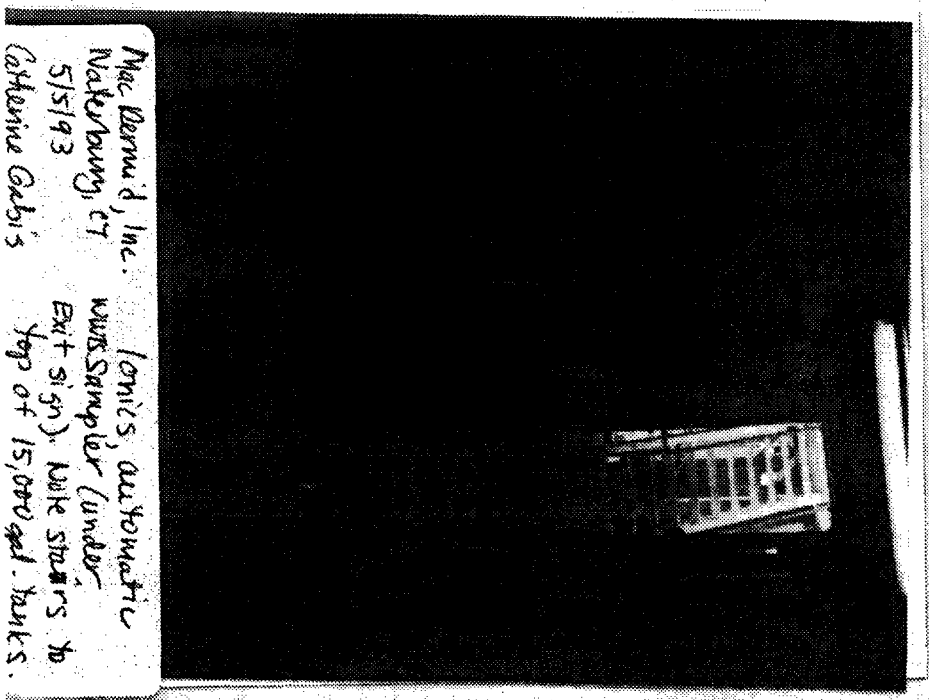
Mac Dermid, Inc.
5/5/93
Waterbury, CT
Catherine Gabis, TRC

WWTS: 15,000 gallon tanks. Note: open tank, note open plastic roof, (on sides)



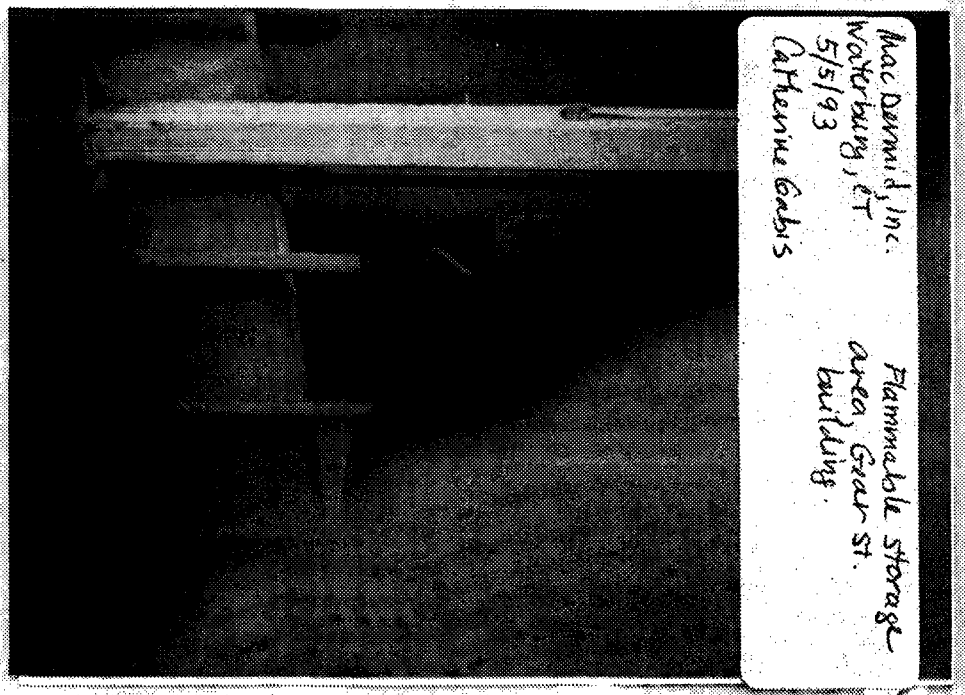
Mac Dermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

Shed with berm leading to WWTS Sludge roll off Container



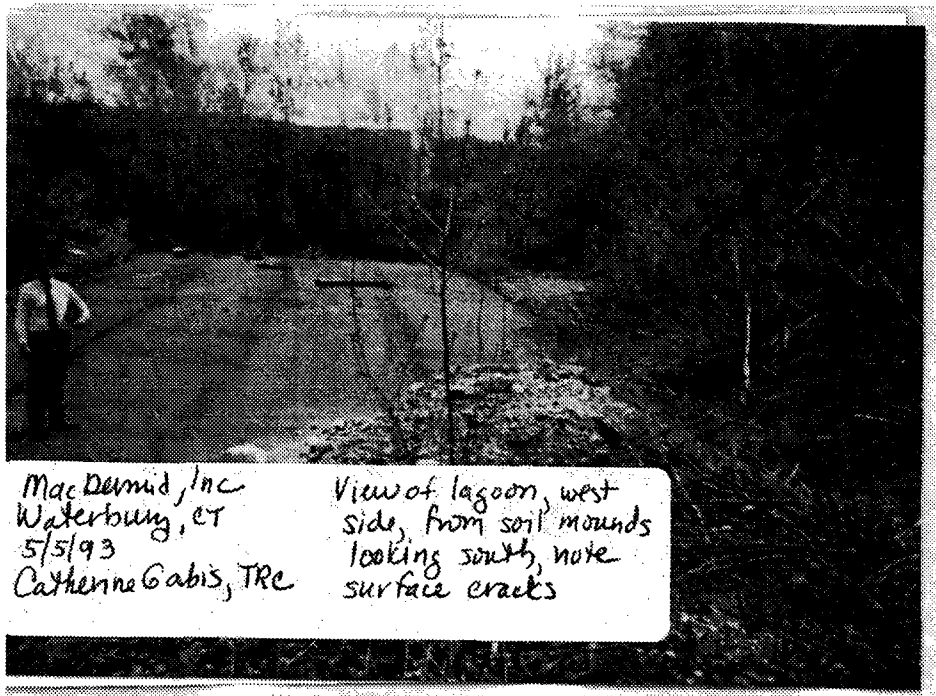
Mac Dermid, Inc.
Waterbury, CT
5/5/93
Catherine Gabis

Ionics automatic WWTS Sampler (under Ext + sign). Note stairs to top of 15,000 gal. tanks.



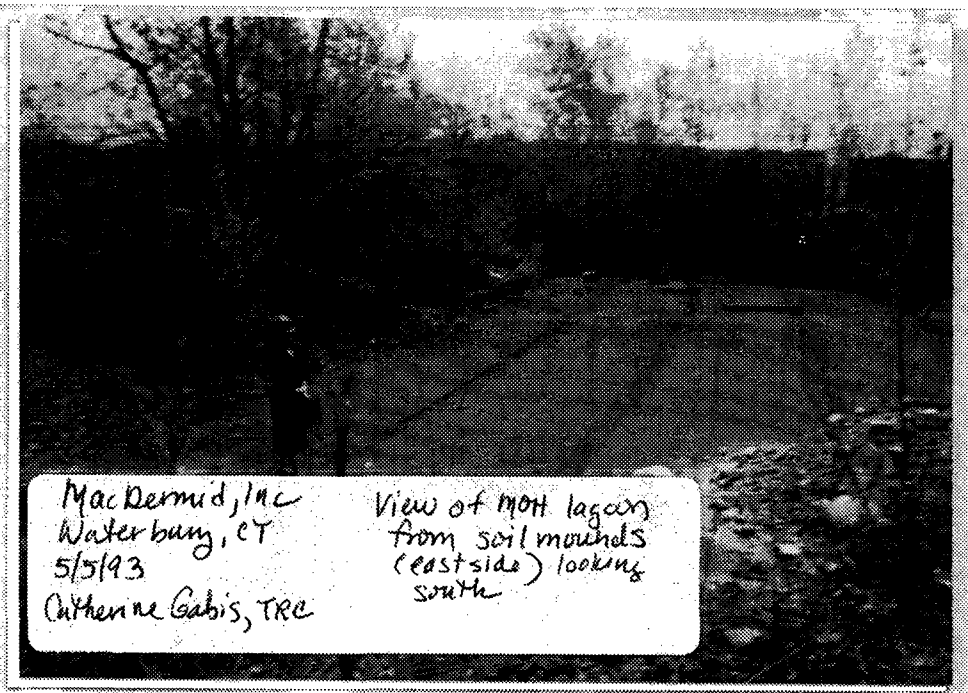
Mac Dermid, Inc.
Waterbury, CT
5/5/93
Catherine Gabis

Flammable storage area, Grear St. building.



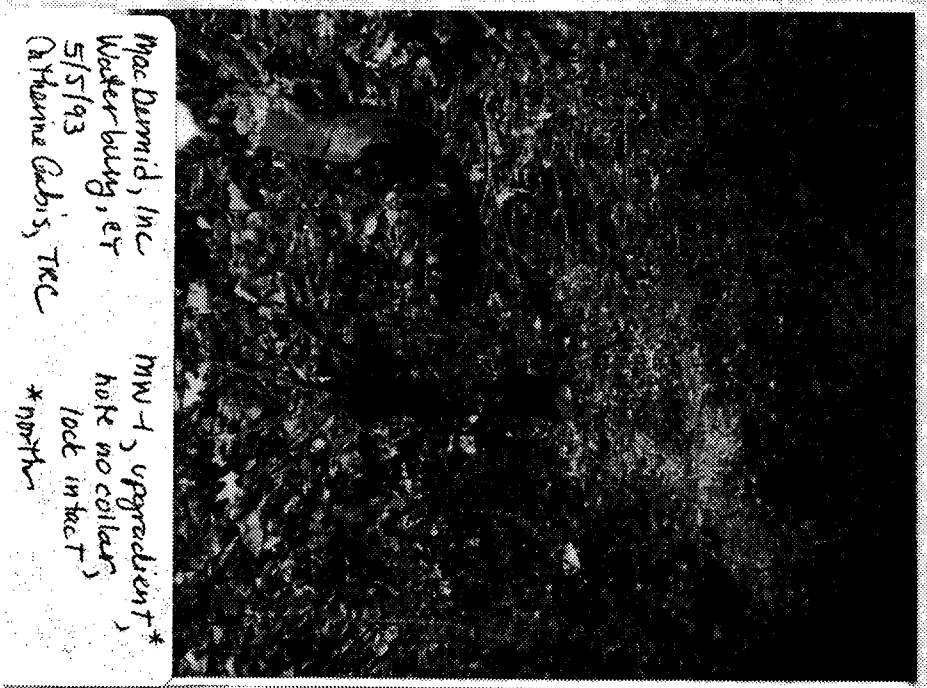
MacDermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

View of lagoon, west side, from soil mounds looking south, note surface cracks



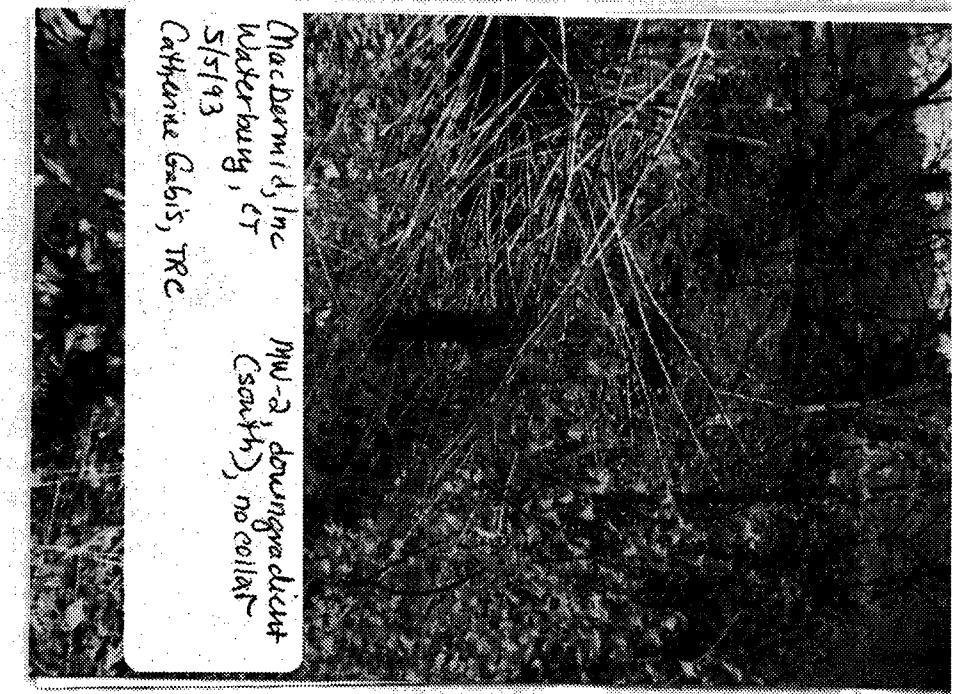
MacDermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

View of NW lagoon from soil mounds (east side) looking south



MacDermid, Inc
Waterbury, CT
5/5/93
Catherine Gabis, TRC

MW-1, upgradient*
hole no collar,
lock intact
*north



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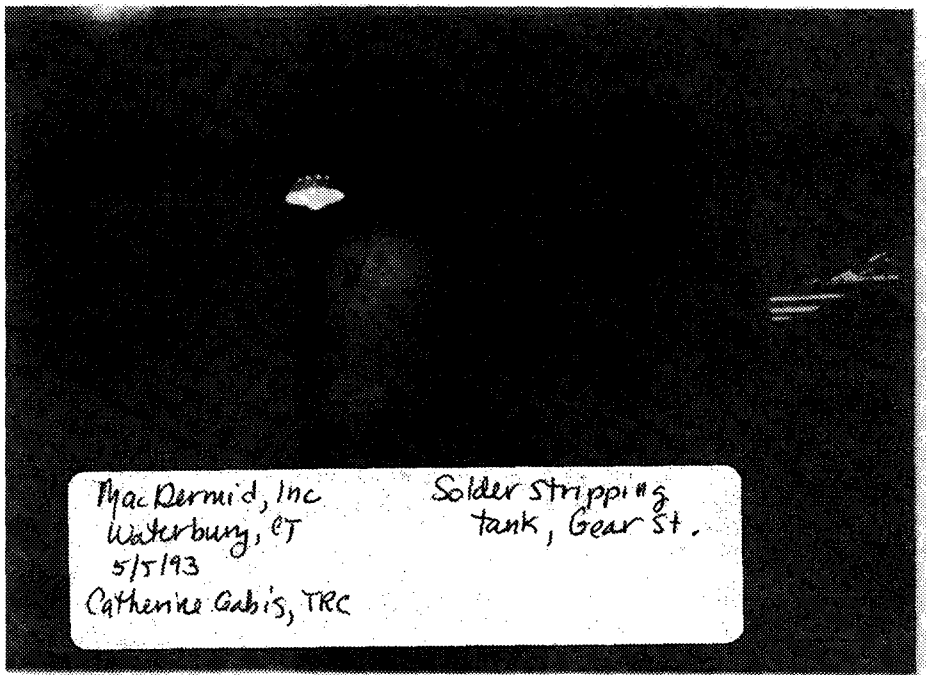
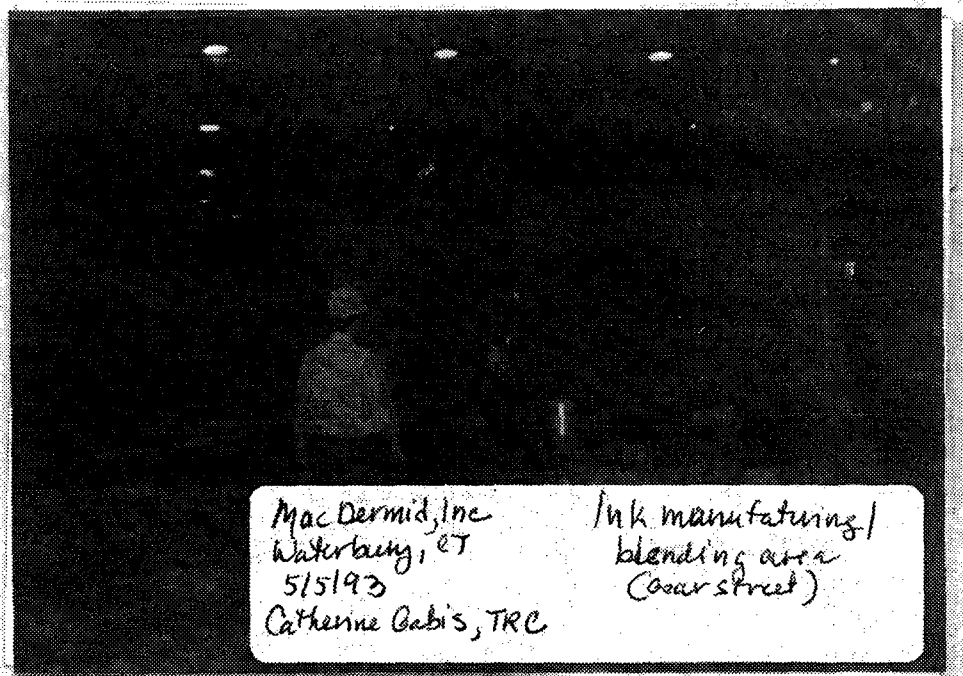
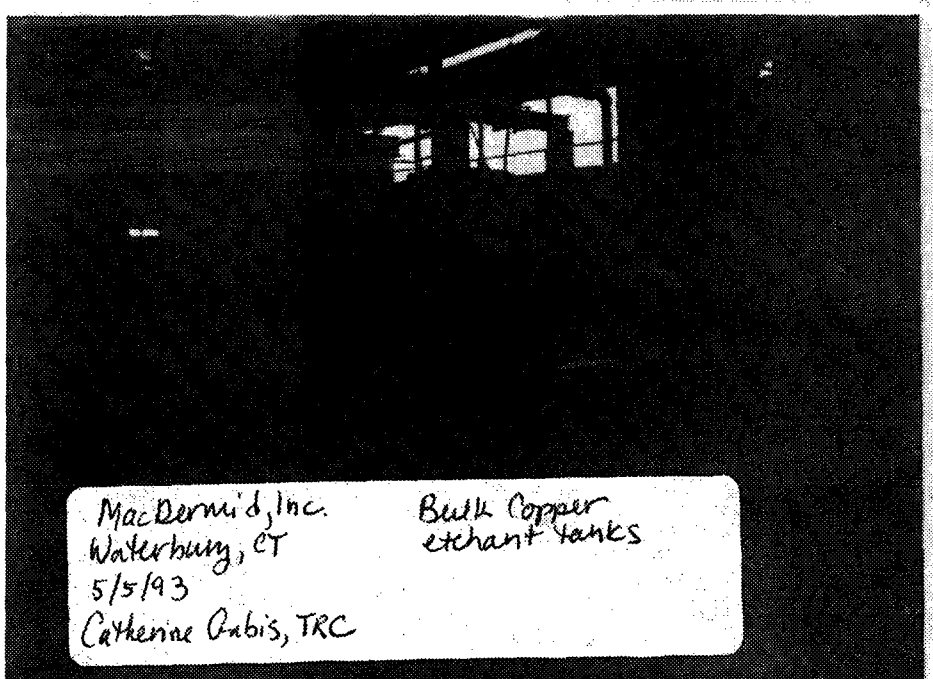
Waterbury, CT
5/5/93
Catherine Gabis, TRC

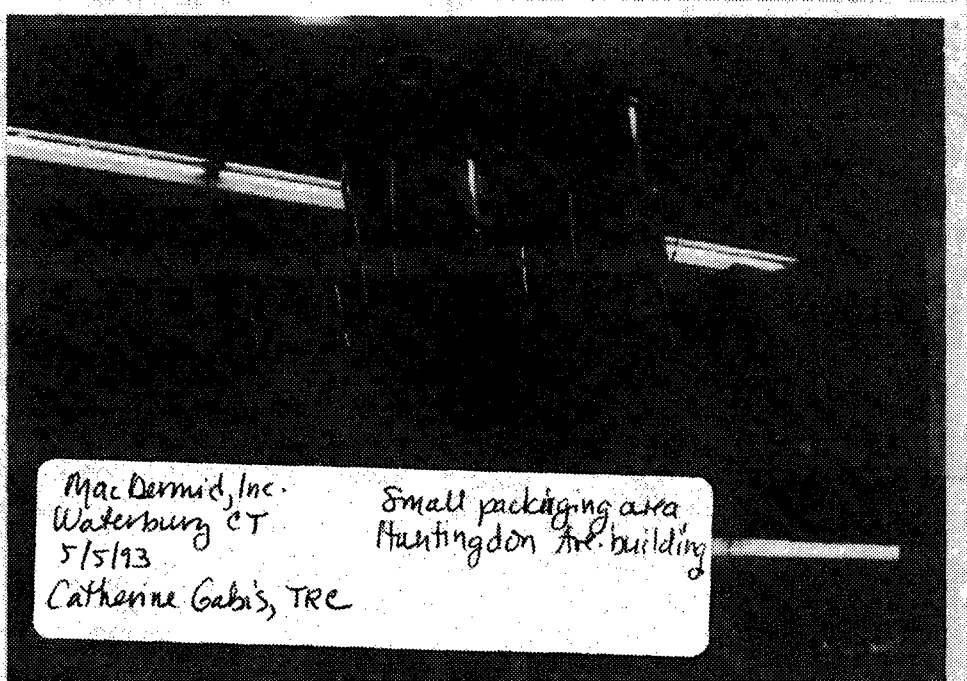
MW-2, downgradient (south), no collar

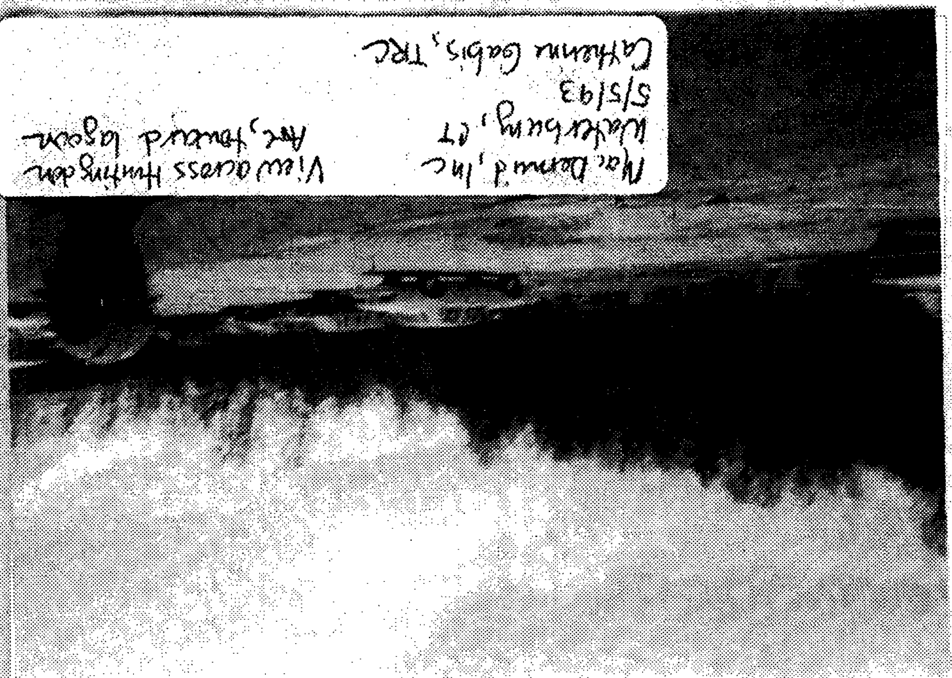
C-LINE #52584
35MM PRINTS











Solder Stripping Tank
Mac Dermid

Queen rack storage in
small packaging room

bulk etchant tanks
Mac Dermid

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